Annual Review of Aircraft Accident Data

U.S. Air Carrier Operations Calendar Year 1999



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CONTENTS

Introduction			
Purpose of the Annual Review	1	•	
Which Aircraft Are Included in this Review?	1	•	
Which Aircraft Are Not Included in this Review?	2	•	
Organization of the Annual Review	2		
The NTSB Investigative Process	3		
The NTSB Aviation Accident/Incident Database	3	:	
Overview of the State of the Commercial Aviation		•	
Environment in 1999	5		
General United States Social, Economic, and Aviation Indicators	5	•	
Aircraft Activity	7		
Historical and Current Accident Data	9		
United States Commercial Aircraft Accidents	9	•	
		•	
Part 121 Operations: 10-Year Summary NTSB Severity Classfication	12		
NTSB Severity Classfication	12		
Defintions of NTSB Severity Classifications	12		
Probable Causes, Factors, and the Broad Cause/Factor Classification	14	•	
#####################################			
Scheduled Part 135 Operations: 10-Year Summary	16	•	
Definitions of Highest Level of Injury	16		
Definitions of Level of Aircraft Damage	18		
		•	
Nonscheduled Part 135 Operations: 10-Year Summary	20	•	
Focus on 1999	23	•	
1999 Part 121 Accidents			
1999 Part 135 Accidents	27		1.
1999 Scheduled Part 135 Accidents	28		
1999 Nonscheduled Part 135 Accidents			
1999 Nonscheduled Part 133 Accidents		:	
a		•	
Appendixes A: NTSB Regional and Field Offices for Aviation Accident Investigation	35		
B: NTSB Forms	37	·	
	47		
C: 1999 Part 121 Accidents	53		
D: 1999 Scheduled Part 135 Accid	53 57	- 1 · 1	Property -
E: 1 PANOnscheduled Part			-
	Language dated in Contra		
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		-	
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INTRODUCTION

PURPOSE OF THE ANNUAL REVIEW

The 1999 Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations presents a statistical compilation and review of accidents that occurred in 1999 involving aircraft operated by U.S. air carriers. In addition to providing accident statistics for 1999, the review also includes general economic and aviation indicators that may have influenced aircraft activity for 1999 as well as contextual accident data from several years preceding the reporting period.

WHICH AIRCRAFT ARE INCLUDED IN THIS REVIEW?

This review covers accidents involving aircraft operated by U.S. air carriers under Title 14, Parts 121 and 135, of the Code of Federal Regulations (CFR). Air carriers are generally defined as operators that fly aircraft in revenue service. Title 14, also known as the Federal Aviation Regulations (FARs), describes operating requirements in Part 121 and Part 135. Briefly stated, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft while Part 135 applies to commercial air carriers commonly referred to as commuter airlines (i.e., scheduled Part 135) and air taxis (i.e., nonscheduled Part 135).

In March 1997, the definition of Part 121 operations changed. Prior to the change, scheduled aircraft with 30 or more seats were operated under Part 121 and those with less than 30 seats were operated under Part 135. After the change, scheduled aircraft with 10 or more seats were classified as Part 121 operations; therefore, since 1997, most carriers that once were popularly known as "commuters" now operate under Part 121.

In this review, the presentation of data for scheduled and nonscheduled Part 135 operations is separated due to the distinct operating characteristics of these groups. According to 14 CFR 119.3, a scheduled operation refers to, "any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the certificate holder or its representative offers in advance the departure location, departure time, and arrival location."

By contrast, a nonscheduled operation refers to, "any operation for compensation or hire that is one of the following:

- (1) Passenger-carrying operations conducted as a public charter under Part 380 of this title or any operations in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative that are any of the following types of operations:
 - (i) Common carriage operations conducted with airplanes, including turbojet-powered airplanes, having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, except that operations using a specific airplane that is also used in domestic or flag operations and that is so listed in the operations specifications as required by Sec. 119.49(a)(4) for those operations are considered supplemental operations;
 - (ii) Noncommon or private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats, excluding

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each crewmember seat, and a payload capacity of less than 6,000 pounds; or (iii) Any rotorcraft operation.

(2) Scheduled passenger-carrying operations conducted with one of the following types of aircraft with a frequency of operations of less than five round trips per week on at least one route between two or more points according to the published flight schedules:

(i) Airplanes, other than turbojet powered airplanes, having a maximum passengerseat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or

(ii) Rotorcraft.

(3) All-cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less, or with rotorcraft."

In addition to the regulatory differences between scheduled and nonscheduled Part 135 operations, there are other general characteristics that distinguish these two groups. Carriers operating under scheduled Part 135 typically fly aircraft with single/twin turbine engines or single/twin reciprocating engines. They are more likely to fly short routes and a majority of operators are based in Alaska. By contrast, nonscheduled Part 135 operators are more evenly distributed throughout the United States and represent a diverse group, ranging from operators with one small aircraft to those with multiple large corporate jets.

While there are many differences in the operating rules for scheduled and nonscheduled Part 135 operations, there are fewer factors that differentiate the operating rules for scheduled and nonscheduled Part 121 operators. In addition, while activity data for scheduled and nonscheduled Part 135 operators are collected using different methods, all Part 121 operations are required to report activity data on a regular basis. Therefore, data for scheduled and nonscheduled Part 121 operations have been combined for analysis.

WHICH AIRCRAFT ARE NOT INCLUDED IN THIS REVIEW?

- General aviation aircraft (A separate review, published annually by the NTSB, summarizes accident statistics for these aircraft);
- Military aircraft;
- Foreign-operated aircraft;
- Certain public use aircraft as defined in 49 CFR 830.5;
- Ultralight vehicles;
- Experimental aircraft; and
- Commercial space launches.

ORGANIZATION OF THE ANNUAL REVIEW

The 1999 Annual Review is organized into three parts:

- The first part presents an overview of the state of the economy and the aviation industry in 1999 as well as contextual statistics from previous years. It also includes a historical overview of both the number of accidents and accident rates between the years 1990 and 1999.
- 2. The second part investigates trends over the past 10 years in terms of various factors such as the types of flight, levels of aircraft damage, and level of human injury. This part is divided into separate sections for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft accidents.



3. The last part focuses on accidents that occurred during the 1999 calendar year and their circumstances. This part is divided into subsections for Part 121 and Part 135. Part 135 is divided further to address scheduled and nonscheduled Part 135 operations.

Much of the information in the Annual Review is presented in graphical form. For readers who wish to view the data in a tabular form or to manipulate the data used in the report, the data set is available online at http://www.ntsb.gov/aviation/Stats.htm.

THE NTSB INVESTIGATIVE PROCESS

The NTSB investigates every civil aviation accident that occurs in the United States. It also provides investigators to serve as U.S. Accredited Representatives as specified in international treaties for aviation accidents overseas involving U.S.-registered aircraft, or involving aircraft or major components of U.S. manufacture. Investigations are conducted from NTSB Headquarters in Washington, D.C., or from one of the ten regional offices in the United States (see Appendix A).

Note that there is a distinction between the population of accidents investigated by the NTSB and those that are included in the Annual Review. While the NTSB investigates all civil aviation accidents that occur on U.S. soil (including domestic and foreign operators), the Annual Review describes accidents that occurred among U.S.-operated aircraft in all parts of the world.

THE NTSB AVIATION ACCIDENT/INCIDENT DATABASE

The NTSB is responsible for maintaining the government's database on civil aviation accidents. The NTSB Accident/Incident Database is the official repository of aviation accident data and causal factors. The database was established in 1962 (by the NTSB's predecessor agency, the Civil Aeronautics Board) and approximately 2,000 new event records are added each year. For each record, there are over 650 fields of data concerning the aircraft, environment, engines, injuries, sequence of accident events and other topics. The NTSB Accident/Incident Database is available to the public at <ftp://www.ntsb.gov/avdata/>. Alternately, there is a Database Query tool at <http://www.ntsb.gov/ntsb/query.asp#query_start> that allows users to search for sets of accidents using commonly known information such as date, location, and category of aircraft.



¹ For more detailed information about the criteria for NTSB investigation of an aviation accident or incident, see Title 49 Code of Federal Regulations 831.2.

The NTSB database is primarily composed of aircraft accidents. An "accident" is defined in 49 CFR 830.2 as, "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death² or serious injury,³ or in which the aircraft receives substantial damage. "⁴ The database also contains several aviation "incidents," defined in 49 CFR 830.2 as, "occurrences other than accidents that are associated with the operation of an aircraft and that affect or could affect the safety of operations."

Accident investigators use the NTSB's Accident Data Management System (ADMS) software to enter data into the Accident/Incident Database. Within about a week of the event, a Preliminary Report, containing limited information such as date, location, aircraft operator, and type of aircraft, becomes available. A Factual Report with additional information concerning the occurrence is available within a few months. See Appendix B for documents showing the information available in Preliminary and Factual Reports. A Final Report, which includes a statement of the probable cause and other contributing factors, is issued after the investigation has been completed. Five presidential appointees serving as Members of the Safety Board, or their delegates, must approve official statements dealing with the probable cause of an accident. Complete records are made available to the public only after this approval has been granted.

In determining the probable cause(s) of an accident, all facts, conditions and circumstances are considered. Within each accident occurence, any information that contributes to the explanation of that event is identified as a "finding" and may be further designated as either a "cause" or "factor." The term "factor" is used to describe situations or circumstances that contributed to the accident cause. The details of probable cause are coded as the combination of all causes, factors, and findings associated with the accident. Just as accidents often include a series of occurrences, the reasons why these occurrences lead to an accident may be the combination of multiple causes and factors. For this reason, a single accident record may include multiple causes and factors.



² "Fatal injury" means any injury that results in death within 30 days of the accident.

³ "Serious injury" means any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

⁴ "Substantial damage" means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

OVERVIEW OF THE STATE OF THE COMMERCIAL AVIATION ENVIRONMENT IN 1999

GENERAL UNITED STATES SOCIAL, ECONOMIC, AND AVIATION INDICATORS

Since 1980, there have been increases in both general economic indicators as well as the number of air carriers and person-miles traveled. Between 1990 and 1999, the U.S. resident population increased by 9.4% and the gross domestic product rose by 32.0%. While the number of major air carriers decreased slightly (down 7.1%) during this time, the number of other carriers (including national, large regional, and medium regional) increased by 44.6%. The number of aircraft and the number of air carrier passenger miles traveled grew at a similar pace with increases of 35.3% and 41.2% respectively. In 1999, the median household income was \$42,187 with an average transportation expenditure of \$7,208.5

Control minimum and the second of the second	1980	1990	1999
Resident population (millions) ⁶	227.3	248.8	272.2
Civilian labor force participation (percent) ⁷	63.8	66.4	67.1
Gross domestic product (billions) ⁸	\$4,900.9	\$6,707.9	\$8,856.5
Median household income ⁹	\$35,238	\$38,446	\$42,187
Number of households (millions) ¹⁰	80.8	93.3	103.9
Number of aircraft ¹¹	3,808	6,083	8,228
Number of major air carriers ¹²	n/a	14	13
Number of other air carriers ¹²	n/a	56	81
Air carrier passenger miles (millions) ¹³	204,368	345,873	488,357

⁷ BLS, <ftp://ftp.bls.gov/pub/special.requests/ep/labor.force/clra8000.txt>.

⁸ In year 1996 dollars. BTS, 2002 National Transportation Statistics (BTS-02-08), Table A.

¹⁰ BTS, 2001 National Transportation Statistics (BTS-02-06), Table A.



⁵ U.S. Department of Labor, Bureau of Labor Statistics (BLS), <ftp://ftp.bls.gov/pub/special.requests/ce/share/1999/income.txt>.

⁶ From Bureau of Transportation Statistics (BTS), 2002 National Transportation Statistics (BTS-02-08), Table A.

From U.S. Census Bureau http://www.census.gov/hhes/income/histinc/h07.html, in year 2000 dollars, using the CPI-U-RS (Consumer Price Index Research Series Using Current Methods).

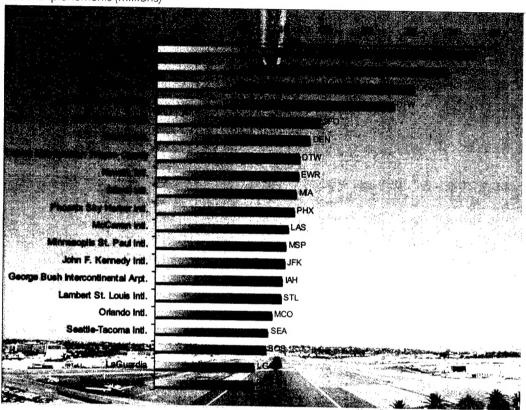
¹¹ Aircraft operating under 14 CFR 121 and 14 CFR 135. BTS, 2002 National Transportation Statistics (BTS-02-08), Table 4-8.

¹² Carrier groups are categorized based on their annual operating revenues as major, national, large regional, and medium regional. The thresholds were last adjusted July 1, 1999, and the threshold for major air carriers is currently \$1 billion. The other air carrier category contains all national, large regional, and medium regional air carriers. Source: BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-2.

¹³ Certificated, domestic, all services. Source: BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-34.

In 1999, there were 674.1 million passenger enplanements at U.S. airports. The following graph depicts the number of enplanements at the top 20 airports in the United States in 1999. With 37.6 million, Hartsfield Atlanta International Airport had the largest number of enplanements.

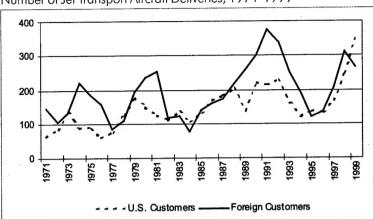
1999 Enplanements (millions)



Since 1971, the annual number of new U.S. jet transport aircraft deliveries has increased for both U.S. and foreign customers. Shipments showed peaks in the mid 1970s, early 1980s, and early 1990s with more dramatic increases for foreign customers. After a dramatic increase for both U.S. and foreign customers between 1996 and 1998, there was a drop to 264 deliveries to foreign customers in 1999, while deliveries for U.S. customers climbed to 356 shipments. The total number of U.S. air carrier aircraft in operation between 1990 and 1999 shows fairly steady growth punctuated by a sharper increase between 1991 and 1992.



 ¹⁴ Federal Aviation Administration. Terminal Area Forecast – Fiscal years 2000-2015, (FAA-APO-00-7).
 ¹⁵ Includes 707, 737, 747, 757, 767, 777, MD-11, MD-80, MD-90, MD-95, DC-8, DC-9, DC-10, and L-1011. From Aerospace Industries Association http://www.aia-aerospace.org/stats/aero_stats/stat21.pdf.



Number of Jet Transport Aircraft Deliveries, 1971-1999

Total Aircraft Reported in Operation by Air Carriers by Type of Aircraft for 1990-1999¹⁶

Year	Total	Fixed Wing Turbojet	Fixed Wing Turboprop	Fixed Wing Piston	Helicopters
1990	6,083	4,148	1,595	329	11
1991	6,054	4,167	1,598	283	6
1992	7,320	4,446	1,894	847	133
1993	7,297	4,584	1,868	721	124
1994	7,370	4,636	1,782	824	128
1995	7,411	4,832	1,713	748	118
1996	7,478	4,922	1,696	739	121
1997	7,616	5,108	1,646	728	134
1998	8,111	5,411	1,832	751	117
1999	8,228	5,630	1,788	688	122

AIRCRAFT ACTIVITY

The following charts depict aircraft activity for Part 121, scheduled Part 135, and nonscheduled Part 135 aircraft between 1990 and 1999. Aircraft activity can be measured in several ways: flight hours, departures, and miles flown are often used for commercial operations. All Part 121 air carriers and scheduled Part 135 carriers are required to report revenue flight activity¹⁷ to the Department of Transportation's (DOT) Research and Special Programs Administration (RSPA).¹⁸ This information is maintained by the Bureau of Transportation Statistics (BTS) and is aggregated by the Federal Aviation Administration Systems Process Audit staff (AFS-40) to produce annual reports of flight activity.

By contrast, nonscheduled Part 135 operators are not required to report activity data for their revenue flights. Instead, activity for this group of aircraft is estimated using the annual General Aviation and Air Taxi Activity (GAATA) Survey. The GAATA Survey was established in 1978 to gather information, such as flight hours, avionics, base location, and use, from owners of general aviation and nonscheduled Part 135 aircraft. Since



¹⁶ Includes 14 CFR Part 121 and scheduled 14 CFR Part 135. The number of aircraft is the monthly average reported in use for the last 3 months of the year. BTS, 2002 National Transportation Statistics (BTS-02-08), Table 1-11.

¹⁷ Activity data include revenue aircraft hours, revenue aircraft departures, revenue aircraft miles flown, and several others.

¹⁸ Part 121 operators report activity on a monthly basis, and scheduled Part 135 operators report quarterly.



Flight Hours by FAR Part, 1990 - 1999 20 Right Hours (Millions) 10 art 121 # Schd Part 135 El Nach Part 135 Departures by FAR Part, 1990 - 1999 12 Departures (Millions) 图Part 121 #Schd Part 135 Miles Flown by FAR Part, 1990 - 1999 Wiles Flown (Billions) Part 121 ■ Schd Part 135

the GAATA Survey is voluntary and directed to aircraft owners rather than operators, activity data for nonscheduled Part 135 revenue flights are generally considered less reliable than those from other segments of commercial aviation.

Prior to the 1998 Annual Review, activity rates were presented using units of hundred thousands of flight hours, hundred thousands of departures, and millions of miles flown. Because of an increase in activity and a decrease in accident numbers, and to facilitate interpretation of rate data, the Annual Review now presents aircraft activity data in units of millions of flight hours, millions of departures, and billions of miles flown, with accident rates calculated using flight hours and departures only.

For all of the Part 121 aviation activity indicators, there was an increase over the 10-year period. The notable increases observed beginning in 1997 are most likely attributable to the 1997 change in the FARs that reclassified many scheduled Part 135 operations as Part 121 operations.

Correspondingly, for scheduled Part 135 aircraft, there was a substantial decrease in all activity indicators between 1996 and 1998. However, the differences between 1998 and 1999 activity measures were relatively small for both Part 121 and scheduled Part 135, suggesting that activity leveled off after the 1997 reclassification.

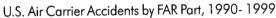
As previously mentioned, the FAA uses data gathered through the GAATA Survey to make annual estimates of flight hours flown by nonscheduled Part 135 operators. In 2002, the FAA changed the method it uses to make this estimate and revised the flight hour estimates for the years of 1992-2000. This modification led to substantial increases in the flight hour estimates for this group. For example, prior to the change, the flight hour estimate for 1999 was 2,260,000 and after the change, it was 3,297,957, an increase of 45.9%. The flight hour data depicted in the 1999 Annual Review represent the revised estimates and suggest a small and steady increase in nonscheduled Part 135 activity over the 10-year period, 1990-1999.

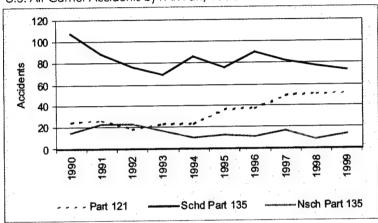


HISTORICAL AND CURRENT ACCIDENT DATA

United States Commercial Aircraft Accidents

There are consistently more Part 135 accidents per year compared to Part 121, as shown in the following graph. In 1999, there were 51 Part 121 accidents, 13 scheduled Part 135 accidents, and 73 nonscheduled Part 135 accidents.

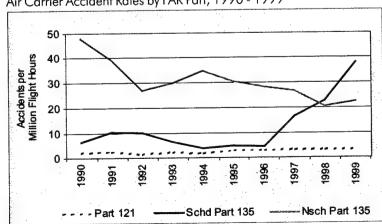




Accident rates are also consistently higher for Part 135 aircraft operations compared to Part 121 operations. As shown in the following graph, the 1999 rate for Part 121 accidents (2.9 per million flight hours) is fairly consistent with the preceding 9-year period. However, rates for scheduled Part 135 increased substantially between 1996 and 1999, with a 1999 rate of 37.9 accidents per million flight hours. This is partly due to the 1997 reclassification of many aircraft from scheduled Part 135 to Part 121 operations. After the reclassification, the activity levels for scheduled Part 135 aircraft dropped dramatically. However, the fact that accident numbers did not show a similar decrease suggests that the operations that were reclassified to Part 121 were safer than those that remained in the scheduled Part 135 group.

There was also a marked decrease in nonscheduled Part 135 accident rates during the 1990-1999 period, with a relatively low 1999 rate of 22.1 accidents per million flight hours. This trend is partly attributable to FAA's revised activity estimates that resulted in consistently higher flight hour estimates for the years 1992 through 1999.

Air Carrier Accident Rates by FAR Part, 1990 - 1999

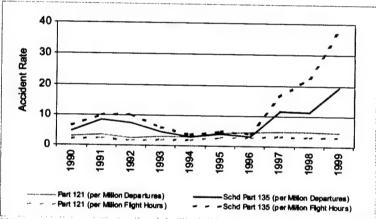


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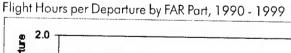
The following graph demonstrates the effects of using different activity measures to calculate accident rates. Regardless of whether flight hours or departures are used to generate accident rates, the same general pattern emerges. Scheduled Part 135 accident rates are higher than Part 121 rates until 1994 when rates for the two groups converge. After 1996, and the reclassification of many Part 135 operations to Part 121, there is a notable divergence with increases in scheduled Part 135 rates. However, the divergence is more dramatic when using flight hours to calculate the rate. One explanation is that aircraft remaining in Part 135 after the reclassification fly shorter-duration trips than those that were reclassified to Part 121. Accident rates for the Part 121 group did not show a similar change after the reclassification. This suggests that the operations moved from scheduled Part 135 to Part 121 were similar to existing Part 121 operations in terms of safety and accident rates.

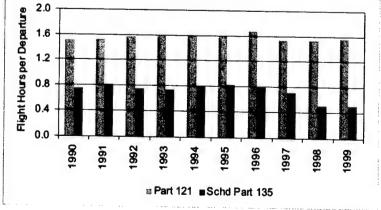
Comparison of Part 121 and Scheduled Part 135 Accident Rates Using Flight Hours and Departures to Calculate Rates



Note: Nonscheduled Part 135 departure data are not available.

The next graph further clarifies the difference between Part 121 and scheduled Part 135 aircraft in terms of the average number of flight hours per departure. The number of flight hours per departure has remained fairly stable for Part 121; however, the flight hours per departure for scheduled Part 135 flights has decreased markedly since 1997.





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Throughout the Annual Review, rates are calculated using both flight hours and departures as activity measures. Flight hours provide the only activity measure available for Part 121, scheduled Part 135, and nonscheduled Part 135 operations. However, because Part 121 and scheduled Part 135 do not have similar flight hours-per-departure rates, departures are also used to calculate accident rates for these groups. Finally, as previously mentioned, the Annual Review presents accident rates using units of accidents-per-million flight hours or departures. Any comparisons with NTSB data published prior to the 1998 Annual Review, when rates were presented using hundred thousand flight hours or departures, should take this into account.

PART 121 OPERATIONS: 10-YEAR SUMMARY

NTSB SEVERITY CLASSIFICATION

Historically, the NTSB has defined a "fatal accident" as one in which there was at least one fatality. However, some accidents involving ground crew fatalities pose no threat to the aircraft or its occupants. While the Safety Board has found no single index that perfectly indicates the state of airline safety, it developed a new classification system for Part 121 accidents in response to a congressional mandate issued October 9, 1996. The following definitions were developed to gauge accident severity for Part 121 accidents. Part 135 severity classifications continue to use the traditional definitions.

DEFINITIONS OF NTSB SEVERITY CLASSIFICATIONS FOR PART 121 ACCIDENTS

Major - an accident in which any of three conditions is met:

A Part 121 aircraft was destroyed, or

There were multiple fatalities, or

There was one fatality and a Part 121 aircraft was substantially damaged.

Serious - an accident in which at least one of two conditions is met:

There was one fatality without substantial damage to a Part 121 aircraft, or There was at least one serious injury and a Part 121 aircraft was substantially damaged.

Injury - a nonfatal accident with at least one serious injury and without substantial damage to a Part 121 aircraft.

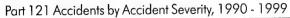
Damage - an accident in which no person was killed or seriously injured, but in which any aircraft was substantially damaged.

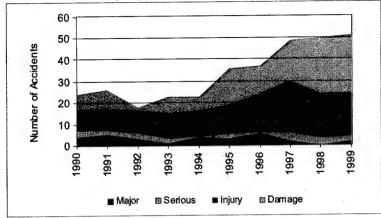
The following graphs depict both the number and rate of Part 121 accidents and the severity of the accidents. In 1999, there were 52 aircraft involved in 51 Part 121 accidents.²⁰ Both the number and rate of Part 121 accidents has increased over the past 10 years. While the number of accidents has approximately doubled, the rates have increased by approximately 50%. This change is almost exclusively due to increases in lower-severity (i.e., injury- and damage-level) accidents.



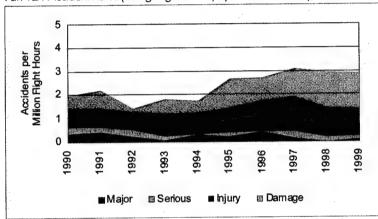
¹⁹ Title 49, Subtitle II, Chapter 11, Subchapter II, Section 1119, "Accident and Safety Data Classification and Publication," was enacted on October 9, 1996, to be applicable to fiscal years beginning after September 30, 1996.

²⁰ A collision between aircraft is counted as one accident for the purpose of this publication. In 1999, there was one accident in which two Part 121 aircraft collided.

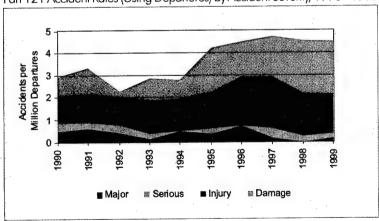




Part 121 Accident Rates (Using Flight Hours) by Accident Severity, 1990 - 1999



Part 121 Accident Rates (Using Departures) by Accident Severity, 1990 - 1999

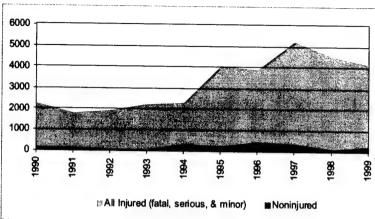


There is a consistent trend over time showing that a very small proportion of people aboard Part 121 flights involved in accidents sustain injuries. In 1999, over 674 million passengers were enplaned at United States airports. Of these, 3,853 passengers boarded Part 121 flights that were involved in accidents; 211 of these passengers sustained injuries.

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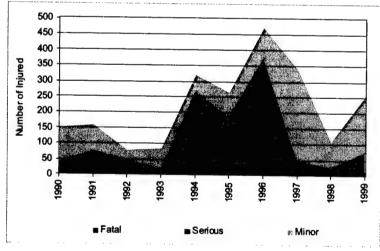
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Injured Compared to Noninjured Aboard Part 121 Accident Flights, 1990 - 1999



In 1999, there were 11 fatalities, 65 serious injuries, and 181 minor injuries among the passengers and crew who were aboard Part 121 flights involved in accidents. These figures represent an increase in the number of injuries compared to 1998; however, the number is still relatively low compared to preceding years. In general, it is difficult to define a trend in the number of people injured since one or two major accidents can lead to a dramatic increase in the number of injuries in a given year.

Number Injured by Level of Injury, Part 121, 1990 - 1999



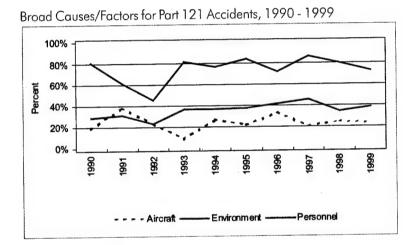
PROBABLE CAUSES, FACTORS, AND THE BROAD CAUSE/FACTOR CLASSIFICATION

As described in the Introduction, within each accident occurrence, any information that contributes to the explanation of that event is identified as a "finding," and may be further designated as either a "cause" or "factor." The term "factor" is used to describe situations or circumstances that contributed to the accident cause. Just as accidents often include a series of events, many factors may combine to cause an accident. For this reason, a single accident record can include multiple cause and factor codes.



The broad cause/factor classification divides all accident causes and factors into three groups – aircraft, environment, and personnel – to provide an overview of fundamental accident origins. When there are two or more causes/factors for an accident, no attempt is made to identify one as the primary cause. Therefore, as depicted in the following figure, the percentages of causes/factors in a given set of accidents will generally sum to more than 100%.

For 1999 Part 121 accidents, cause/factor information was available in 44 of 51 cases.²¹ Within this set, aircraft were cited as causes/factors in 22.7% of accidents, environmental causes/factors were present in 38.6% of accidents, and personnel-related causes/factors were present in 72.7% of accidents. This distribution is fairly consistent with the preceding 9-year period.



²¹ The seven accidents where cause/factor information was not available all occurred outside of the United States. Because the NTSB does not lead foreign investigations, data on the causes/factors, occurrences, phases of flight, and sequence of events are not documented in these cases.

SCHEDULED RART 135 OPERATIONS: 10-YEAR SUMMARY

Part 135 regulations apply to commercial air carriers that fly small commuter aircraft, cargo planes, and air-taxis. Scheduled Part 135 operations refer to revenue-passenger operations for which the certificate holder or its representative offers departure/arrival locations and departure times in advance of the flights.

Unlike Part 121, all Part 135 accidents are classified by traditional definitions including highest level of injury (fatal, serious, minor, or none), and level of aircraft damage (destroyed, substantial, minor, or none).

DEFINITIONS OF HIGHEST LEVEL OF INJURY

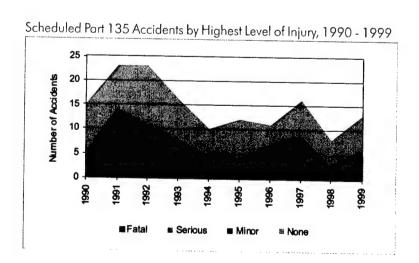
Fatal - Any injury that results in death within 30 days of the accident.

Serious - Any injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

Minor - Any injury that is neither fatal nor serious.

None - No injury.

In 1999, there were 13 scheduled Part 135 aircraft involved in accidents. While 13 accidents may appear relatively low compared to the preceding years, it is important to note that the number of aircraft flying scheduled Part 135 flights decreased substantially in 1997 when many flights were reclassified to Part 121. The reduction in accidents between 1997 and 1999 is not consistent with the drop in activity among scheduled Part 135 operations. The following charts depicting accident rates further clarify this relationship.

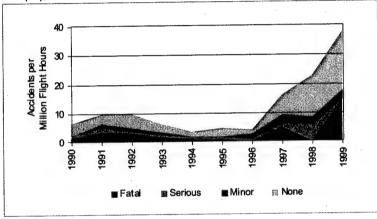


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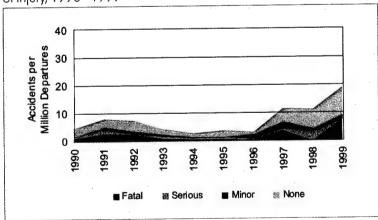
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From 1996 through 1999, scheduled Part 135 accident rates experienced a dramatic increase. This is partly attributable to a sharp decrease in activity among scheduled Part 135 operators, including an 87.6% decrease in flight hours and an 80.9% decrease in departures between 1996 and 1999. During the same period, there was an 18.2% increase in the number of scheduled Part 135 accidents. It is likely that these changes are due to the reclassification of aircraft from scheduled Part 135 to Part 121. Those that were reclassified to Part 121 were comprised of larger aircraft, flown by more established operators. Those remaining in the scheduled Part 135 group were smaller aircraft, operated primarily in Alaska where weather and terrain are more rugged than in the rest of the United States.





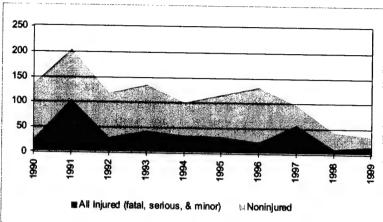
Scheduled Part 135 Accident Rates (Using Departures) by Highest Level of Injury, 1990 - 1999



In 1999, 34 people boarded scheduled Part 135 flights that were involved in accidents and, from this group, 15 people received injuries. The relative proportion of people who were injured in scheduled Part 135 accidents is considerably higher than in Part 121 accidents.

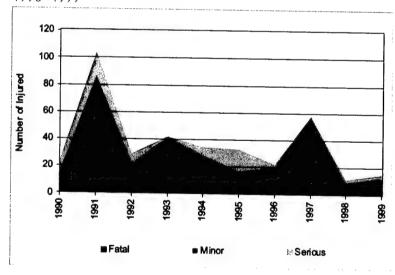


Injured Compared to Noninjured Aboard Scheduled Part 135 Accident Flights, 1990 - 1999



In 1999, scheduled Part 135 accidents resulted in 12 fatal injuries, 2 serious injuries, and 1 minor injury.

Number of Injured by Level of Injury, Scheduled Part 135, Accident Flights, 1990 - 1999



As noted earlier, Part 135 accidents are also classified by the level of damage (destroyed, substantial, minor, or none) sustained by the aircraft.

DEFINITIONS OF LEVEL OF AIRCRAFT DAMAGE

Destroyed - Damage due to impact, fire, or in-flight failures to the extent to not be economically repairable.

Substantial - Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades,

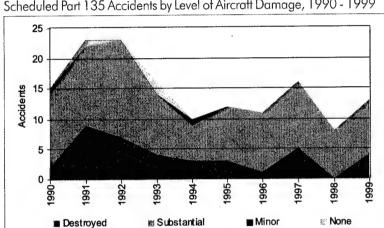


and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.²²

Minor - Any damage that neither destroys the aircraft nor causes substantial damage.

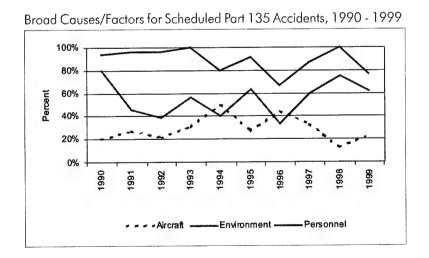
None - No damage.

Of the 13 aircraft involved in scheduled Part 135 accidents in 1999, 9 had substantial damage and 4 were destroyed. The following graph also shows that, over the past 10-year period, most scheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.



Scheduled Part 135 Accidents by Level of Aircraft Damage, 1990 - 1999

In 1999, 23.1% of all scheduled Part 135 accidents listed aircraft as a cause or factor in the accident. Environmental causes/factors were present in 61.5% of accidents, and personnel-related causes/factors were present in 76.9% of accidents.

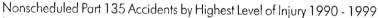


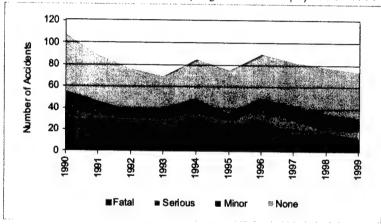


Nonscheduled Part 135 Operations: 10-Year Summary

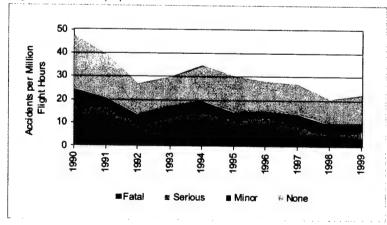
Nonscheduled operations refer to revenue-earning flights in which the departure time, departure location, and arrival location are specifically negotiated with the customer or the customer's representative. They include all cargo flights and some passenger flights.

There were 74 aircraft involved in 73 nonscheduled Part 135 accidents in 1999.²³ Over the past 10 years, both the number of accidents and the accident rates for nonscheduled Part 135 accidents have declined. However, the drop in accident rates that occurs after 1991 is partly influenced by the FAA's 2002 revision of nonscheduled Part 135 flight hours for the period of 1992 forward.





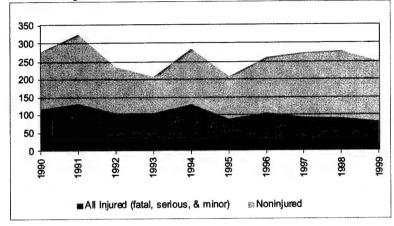
Nonscheduled Part 135 Accident Rates (Using Flight Hours) by Highest Level of Injury 1990 - 1999



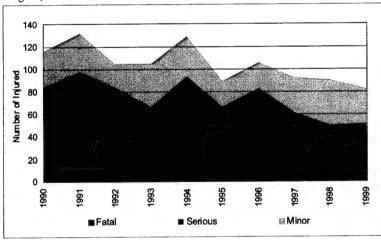


²³ A collision between aircraft is counted as one accident for the purpose of this publication. In 1999, there was one accident in which two nonscheduled Part 135 aircraft collided.

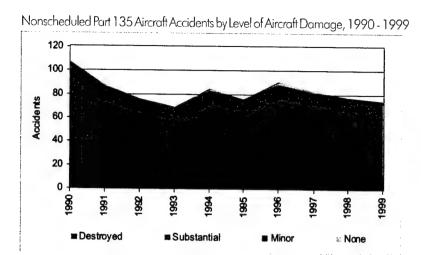
Injured Compared to Noninjured Aboard Nonscheduled Part 135 Accident Flights, 1990 - 1999



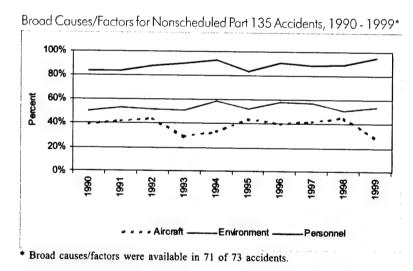
Number of Injured by Level of Injury, Nonscheduled Part 135 Accident Flights, 1990 - 1999



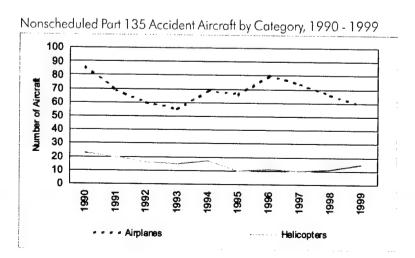
Of the 74 aircraft involved in nonscheduled Part 135 accidents in 1999, 13 were destroyed, 59 had substantial damage, and 2 sustained minor damage. Similar to scheduled Part 135 aircraft, the following graph shows that, over the past 10-year period, most nonscheduled Part 135 aircraft that were involved in accidents received either substantial damage or were destroyed.



In 1999, cause/factor information was available for 71 of 73 accidents. In 28.2% of these cases, aircraft were causes/factors in the accident. Environmental causes/factors were present in 53.5% of accidents, and personnel-related causes/factors were present in 94.4% of accidents.



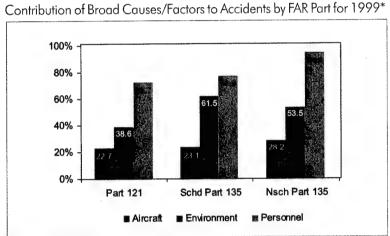
Of the 74 nonscheduled Part 135 aircraft involved in accidents in 1999, 59 were airplanes and 15 were helicopters. The ratio of airplanes to helicopters involved in accidents has been fairly stable over the past several years.





Focus on 1999

While the previous section described trends in accidents among U.S. air carriers over a 10-year period, this section focuses on events specific to 1999. As an overview, the following graph provides a comparison of the role that personnel, environment, and aircraft played in all air carrier accidents that occurred in 1999. Most notable is the fact that personnel were cited as a cause or factor in the largest percent of accidents for all categories of commercial operations described in this review. Environment accounted for the second largest contribution, and aircraft-related problems contributed the least.



^{*} Broad causes/factors were available in 44 of 51 Part 121 accidents, 13 of 13 scheduled Part 135 accidents, and 71 of 73 nonscheduled Part 135 accidents.

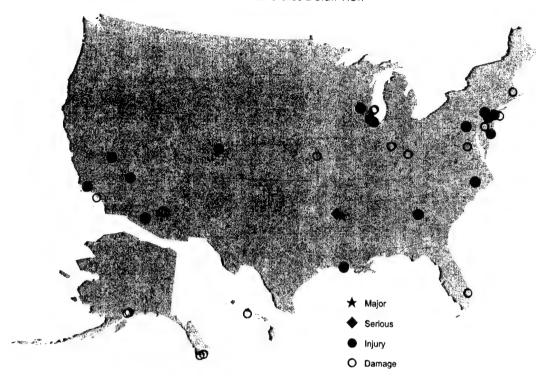
1999 PART 121 ACCIDENTS

As discussed in the Introduction, Part 121 applies to major airlines and cargo carriers that fly large transport-category aircraft. Of the 51 Part 121 accidents in 1999, 42 occurred in the United States and its territories, 7 in foreign countries, 1 over the Atlantic Ocean, and 1 over the Pacific Ocean.





Location of Part 121 Accidents in 1999 – United States Detail View



Of the 52 Part 121 aircraft involved in accidents in 1999, 80.8% were passenger flights, and 19.2% were cargo-only. In addition, 11.5% of Part 121 accidents occurred during nonscheduled flights while 88.5% occurred during scheduled operations. This is particularly notable since nonscheduled flights accounted for only 4.9% of total Part 121 flight hours and just 4.0% of Part 121 departures. Nonscheduled flights were similarly overrepresented during the years 1996 through 1998. Finally, the large majority of Part 121 accidents (92.3%) had a severity classification of either Injury or Damage (i.e., the two least severe categories).

Part 121 Accident Severity Classifications by Type of Operation for 1999

Scheduled			Nonscheduled		
	Cargo	Passenger	Cargo	Passenger	Total
Major	1	1	0	0	2
Serious	0	2	0	0	2
Injury	0	20	0	0	20
Damage	5	17	4	2	28
Total	6	40	4	2	52

The following table displays the first occurrences for 45 aircraft involved in 44 accidents for which occurrence data were available. There are a total of 52 occurrence codes that may be used to outline the events in any given accident. The most frequently cited first occurrences for Part 121 accidents in 1999 were in-flight encounters with weather and on-ground/water collisions with objects, each of which accounted for 17.8% of all aircraft.

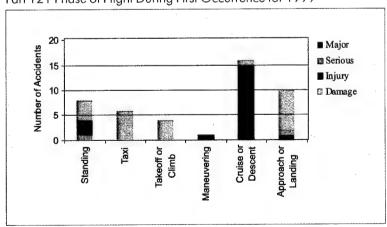


per (43) ps. se deservatemente describerational describerational describeration d	Number of Aircraft	Percent of Aircraft
In-flight encounter with weather	8	17.8
On-ground/water collision with object	8	17.8
In-flight collision with object	5	11.1
Miscellaneous/other	5	11.1
Airframe/component/system failure/malfunction	3	6.7
Altitude deviation, uncontrolled	2	4.4
Hard landing	2	4.4
Loss of control - on-ground	2	4.4
Collision between aircraft (other than midair)	2	4.4
Vortex turbulence encountered	2	4.4
Abrupt maneuver	1	2.2
Near collision between aircraft	1	2.2
Overrun	1	2.2
Loss of engine power (total) mech failure/malfunction	1	2.2
Loss of engine power (partial) mech failure/malfunction	1	2.2
Propeller/rotor contact to person	1	2.2
Total aircraft	45	100.0
Total accidents	44	

^{* 45} of 52 Part 121 aircraft accidents included occurrence data.

The following graph displays the aircraft's phase of flight during the first occurrence. There are 50 distinct phase-of-flight codes that investigators may use to describe the chronology of occurrences. However, these detailed phases have been condensed for this graph. For example, the category "Standing" includes standing with engines operating, standing with engines not operating, and standing while starting engines. For Part 121 accidents in 1999, the first occurrences for approximately one third (35.6%) of all aircraft that were involved in accidents happened during the cruise or descent phase.

Part 121 Phase of Flight During First Occurrence for 1999

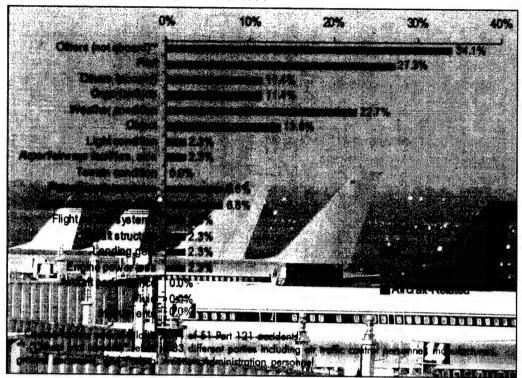


The following graph displays the causes and factors of 1999 Part 121 accidents. There are about 2,000 unique codes that investigators may use to document causes/factors. The following graph summarizes them using the broad cause/factor (personnel, environment,



and aircraft), represented by color coding, as well as the next level of subcategory, represented with individual bars on the chart.

Part 121 Most Prevalent Causes/Factors for 1999*



It is clear from this graph that many of these accidents are attributed to personnel-related causes and factors. With 27.3%, the pilot is the most frequently cited individual in the personnel category; however, there were numerous accidents attributed to other people not aboard the aircraft, such as ground personnel, air traffic controllers, and manufacturer personnel. The most frequently cited cause/factor in the environmental category was weather with 22.7%. "Objects," such as birds or airport vehicles, was the second-highest category with 13.6%. In the broad category of aircraft, systems/equipment and powerplant/propulsion each accounted for 6.8% of the causes/factors with no other category capturing more than 5%.

Among the 51 Part 121 accidents that occurred in 1999, 2 accidents resulted in 12 fatalities. Eleven people were fatally injured on June 9 in Little Rock, Arkansas, when a McDonnell Douglas MD-82 overran the end of a runway. One fatality occurred on July 28 in Little Rock, Arkansas, when a ground crewmember received fatal injuries from contact with a rotating propeller of an Aerospatiale ATR 42-500 turbo-propeller airplane.

In addition to these fatalities, there were 67 serious injuries and 181 minor injuries that resulted from Part 121 accidents in 1999. The majority of these injuries resulted from the June 9 overrun accident in Little Rock. Cabin crews suffered the highest percentage of injury with 42 (25.3%) of all cabin crewmembers involved in accidents sustaining some level of injury. Of the 3,853 passengers involved in accidents, only 211 (5.5%) received injuries, and of the 109 flight crewmembers, only 4 (3.7%) sustained injuries.



Part 121 Accident Injuries by Role for 1999

da was To constitution that the grant state of the	Fatal	Serious	Minor	None	Total
Flight crew	1	1	2	105	109
Cabin crew	0	18	24	124	166
Other crew	0	0	0	12	12
Passengers	10	46	155	3,642	3,853
Total aboard	11	65	181	3,883	4,140
On ground	1	2	0	-	3
Total	12	67	181	3,853	4,143
Accidents	2	21	1	26	51

The majority of 1999 Part 121 accidents involved aircraft with turbofan engines (63.5%). In addition, 23.1% had turboprop, and 13.5% had turbojet engines.

Part 121 Engine Type by Level of Aircraft Damage for 1999

	Turbofan	Turboprop	Turbojet	Total
Destroyed	2	0	0	2
Substantial	16	8	4	28
Minor	2	2	0	4
None	13	2	3	18
Total	33	12	7	52

1999 Part 135 Accidents

As noted in the Introduction, Part 135 applies to commercial air carriers that operate small commuter flights (i.e., scheduled Part 135), cargo flights, and air taxis (i.e., nonscheduled Part 135). The presentation of data for scheduled and nonscheduled Part 135 operations is separated due to the distinct operating characteristics of these groups.

Scheduled Part 135 operations consist of common carriage passenger-revenue flights using aircraft with fewer than 10 seats. In addition, to be considered a scheduled operation, the departure location, departure time, and arrival location must be offered in advance by the operator, and the operator must include five or more round trips per week between two or more points.

Nonscheduled operations include flights in which the departure time, departure location, and arrival location are specifically negotiated with the customer. These include common carriage operations conducted with aircraft having a passenger-seat configuration of 30 seats or fewer and a payload capacity of 7,500 pounds or less; private carriage operations conducted with aircraft having a passenger-seat configuration of fewer than 20 seats and a payload capacity of less than 6,000 pounds; and cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less.



Of the 87 aircraft involved in Part 135 accidents in 1999, 13 were scheduled and 74 were nonscheduled. All of the scheduled Part 135 accidents took place on passenger flights. For nonscheduled Part 135 accidents, 68.9% were passenger flights and 31.1% carried cargo and/or mail. In both nonscheduled and scheduled Part 135 accidents, fewer than half resulted in injuries.

Part 135 Accident Aircraft Classified by Schedule Type and Highest Injury for 1999

	Scheduled	Nonschedu	iled	
Fatal	5	7	5	17
Serious	0	8	1	9
Minor	1	7	4	12
None	7	29	13	49
Total	13	51	23	87

There are two main types of flight plans that are filed: visual flight rules (VFR) and instrument flight rules (IFR). VFR govern the conduct of flight under visual meteorological conditions (VMC), and IFR govern the conduct of flight under instrument meteorological conditions (IMC). An IFR flight plan is also required to receive certain air traffic control services. For scheduled Part 135 accidents in 1999, all but one had filed VFR flight plans, with the remaining flight having no flight plan filed. For nonscheduled flights, the flight plans of 54.1% were under VFR and 33.8% were under IFR. In 12.2% of cases, the flight plan was unknown or there was no flight plan.

Part 135 Accident Aircraft by Schedule Type and Flight Plan for 1999

	Scheduled	Nonscheduled	Total		
Visual Flight Rules (VFR)	12	40	52		
Instrument Flight Rules (IFR)	0	25	25		
Unknown or None	1	9	10		
Total	13	74	87		

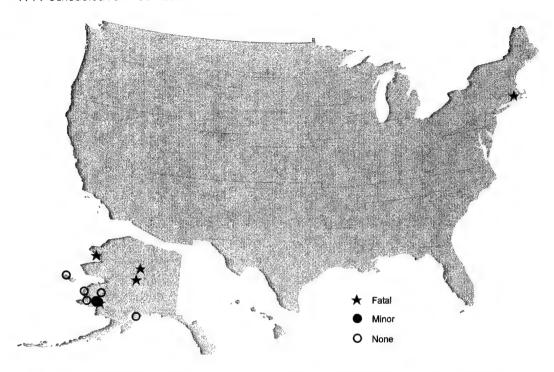
1999 SCHEDULED PART 135 ACCIDENTS

There were 13 scheduled Part 135 accidents in 1999. All of the accidents occurred in the United States, with 12 accidents in Alaska and 1 in Rhode Island. The large proportion of accidents in Alaska is partly due to the fact that over half of all scheduled Part 135 operators are certificated in Alaska; however, it is also likely due to the more challenging operating environment in Alaska.

n hueteen



1999 Scheduled Part 135 Accidents



Four first occurrences accounted for 10 of the 13 scheduled Part 135 accidents that occurred in 1999. In-flight encounter with weather accounted for 30.8% of all accidents, while in-flight collision with object, in-flight collision with terrain/water, and loss of control in-flight each accounted for 15.4%.

First Occurrences for Scheduled Part 135 Accidents in 1999

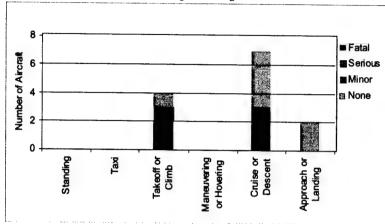
\$1	Number of Aircraft	
In-flight encounter with weather	4	30.8
In-flight collision with object	2	15.4
In-flight collision with terrain/water	2	15.4
Loss of control - in-flight	2	15.4
Forced landing	1	7.7
Overrun	1	7.7
Loss of engine power	1 1	7.7
Total aircraft	13	100.0
Total accidents	13	

Of the 13 scheduled Part 135 accidents that occurred in 1999, the phase of flight during the first accident occurrence was cruise or descent in 7 cases, takeoff or climb in 4 cases, and approach or landing in 2 cases.

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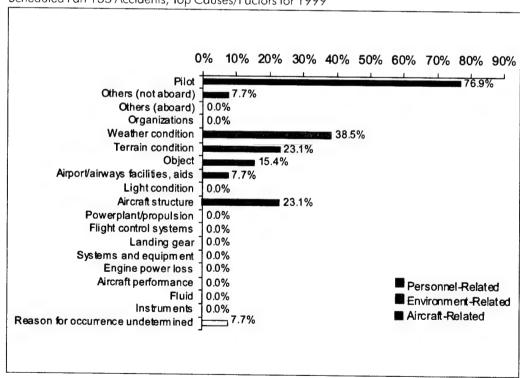


Scheduled Part 135, Phase of Flight During First Occurrence for 1999



As with Part 121, the pilot was identified as a cause/factor in a large number of scheduled Part 135 accidents (76.9%). The largest contributor in the broad category of environmental factors was weather conditions, cited in 5 of 13 accidents (38.5%). Finally, the only aircraft-related cause/factor was aircraft structure, listed in 3 accidents (23.1%).

Scheduled Part 135 Accidents, Top Causes/Factors for 1999



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There were 12 fatalities that resulted from scheduled Part 135 accidents in 1999. In addition, there were 2 serious injuries and 1 minor injury. The proportion of people injured in flights was approximately equal for crewmembers and passengers with 46.2% and 42.9%, respectively.

the second second	Fatal	Serious	Minor	None	Total
Flight Crew	5	0	1	7	13
Cabin Crew	0	0	0	0	0
Other Crew	0	0	0	0	0
Passengers	7	2	0	12	21
Total aboard	12	2	1	19	34
On-ground	0	0	0	-	0
Total	12	2	1	19	34
Accidents	5	0	1	7	13

Eleven of 13 scheduled Part 135 accidents involved airplanes with reciprocating engines, and two accidents involved airplanes with turboprop engines.

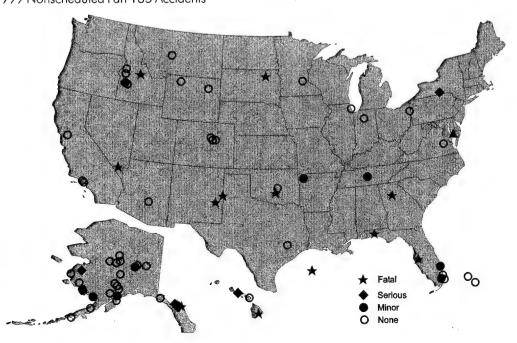
Scheduled Part 135 Accidents by Engine Type for 1999

With the same of t	Reciprocating	Turboprop	Total
Destroyed	4	0	4
Substantial	7	2	9
Minor	0	0	0
None	0	0	0
Total	11	2	13

1999 Nonscheduled Part 135 Accidents

There were 73 nonscheduled Part 135 accidents in 1999 with 71 occurring in the United States and 2 in the Caribbean. Of the 71 that occurred in the U.S., 26 were in Alaska and the remaining accidents were distributed among the lower 49 states and Puerto Rico (including 4 helicopter accidents that occurred over the Gulf of Mexico but are not shown on the following map).

1999 Nonscheduled Part 135 Accidents



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In 1999, of the 74 aircraft involved in 73 nonscheduled Part 135 accidents, there were 59 airplanes and 15 helicopters. All aircraft, except for two that crashed outside of the United States, had occurrence data available. For the airplanes, in-flight encounters with weather, mechanical losses of engine power, and on-ground/water collisions with objects were the most frequently cited first occurrences. For helicopter accidents, the most frequently cited first occurrences were in-flight encounter with weather, in-flight loss of control, and on-ground/water loss of control. For a more detailed itemization of first occurrences, see the table below.

First Occurrences for Nonscheduled Part 135 Airplanes Involved in Accidents in 1999*

57	100.0	15	100.0
		1	6.7
1	1.8		
1	1.8		
1	1.8		
1	1.8		
1	1.8		
1	1.8		
1	1.8	2	13.3
1	1.8		
1	1.8		
2	3.5		
2	3.5		
3	5.3		1
3	5.3		
3	5.3	2	13.3
3	5.3	3	20.0
4	7.0		
4	7.0	3	20.0
4	7.0	1	6.7
4	7.0		
5	8.8		
5	8.8		
6	10.5	3	20.0
	5 5 4 4 4 4 3 3 3 3 2 2 1 1 1 1 1 1 1	5 8.8 5 8.8 4 7.0 4 7.0 4 7.0 4 7.0 3 5.3 3 5.3 3 5.3 3 5.3 2 3.5 2 3.5 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8	5 8.8 5 8.8 4 7.0 4 7.0 3 5.3 3 5.3 3 5.3 2 3.5 2 3.5 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8 1 1.8

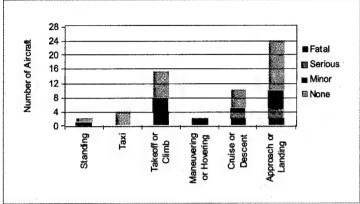
^{*} Occurrence data were available for 72 of 74 aircraft.

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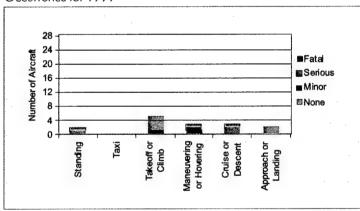
Of the 57 nonscheduled Part 135 airplanes with occurrence data available, the majority of first occurrences happened during approach/landing (42.1%) or during takeoff/climb (26.3%) with a somewhat smaller number (17.5%) during cruise/descent. Of the 15 helicopters involved in accidents, 33.3% crashed during the takeoff/climb phase and the remaining accidents were fairly evenly distributed across all of the phases of flight with the exception of taxiing.

Nonscheduled Part 135 Airplanes Phase of Flight During First Occurrence for 1999*



* Phase of flight data were available for 57 of 59 airplanes.

Nonscheduled Part 135 Helicopters Phase of Flight During First Occurrence for 1999



For both nonscheduled Part 135 airplane and helicopter accidents, the pilot was the most frequently cited cause/factor. For both airplanes and helicopters, the next most frequently cited causes/factors were terrain and weather conditions.

Among the 73 nonscheduled Part 135 accidents that occurred in 1999, 12 accidents resulted in 38 fatalities. In addition to these fatalities, there were 14 serious injuries and 31 minor injuries. Of the 162 passengers involved in accidents, 31.5% received injuries. For flight crewmembers, this rate was slightly higher with 37.8% sustaining some level of injury. However, neither the one cabin crewmember nor the four medical flight workers classified as "other" crewmembers were injured.



Nonscheduled Part 135 Accidents, Top Causes/Factors for 1999 *

	Airplanes (percent)	Helicopters (percent)				
Personnel						
Pilot	73.7	93.3				
Others (not aboard)	21.1	13.3				
Others (aboard)	1.8	0.0				
Organizations	1.8	13.3				
Aircraft						
Power plant/propulsion	12.3	0.0				
Fluid	7.0	0.0				
Aircraft structure	5.3	0.0				
Engine power loss	3.5	0.0				
Flight control systems	1.8	0.0				
Landing gear	1.8	6.7				
Instruments	1.8	0.0				
Systems and equipment	1.8	0.0				
Aircraft performance	0.0	0.0				
Environment						
Terrain condition	24.6	33.3				
Weather condition	22.8	46.7				
Light condition	7.0	20.0				
Object	7.0	0.0				
Airport/airways facilities, aids	7.0	0.0				
* C /C . 1						

^{*} Cause/factor data were available for 57 of 59 airplanes and for 15 of 15 helicopters.

Injuries by Role for Nonscheduled Part 135 Accidents in 1999

	Fatal	Serious	Minor	None	Total
Flight Crew	13	5	13	51	82
Cabin Crew	0	0	0	1	1
Other Crew	0	0	0	4	4
Passengers	25	8	18	111	162
Total aboard	38	13	31	167	249
On-ground	0	1	0		1
Total	38	14	31	167	250
Accidents	12	9	11	41	73

The most common engine type among nonscheduled Part 135 accident aircraft was reciprocating with 63.5%. Turboshaft and turboprop engines represented 17.6% and 12.2%, respectively, and there were just a few turbofan and turbojet engines in the set.

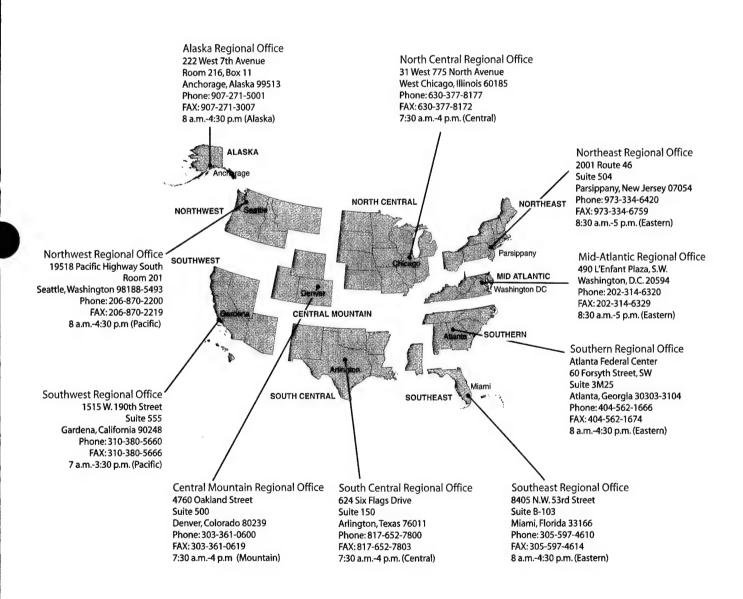
Nonscheduled Part 135 Accidents - Engine Type by Aircraft Damage, 1999

20m 2m 2	Reciprocating	Turboshaft	Turboprop	Turbojet	Turbofan	Total
Destroyed	7	3	2	0	1	13
Substantial	39	10	6	3	1	59
Minor	1	0	1	0	0	2
None	0	0	0	0	0	0
Total	47	13	9	3	2	74

n in e t e e n



NTSB REGIONAL OFFICES FOR AVIATION ACCIDENT INVESTIGATION



1998 PART 121 ACCIDENTS

Parametry 15, 1999 NSTSAT Passenger And Parameter No. 1, 1999 NSTSAT Passenger And Passenger And Parameter No. 1, 1999 NSTSAT Passenger And Passenger									Aminima	Total		
N33AA Passenger and Pannfuld, PA Annerson Annerson Passenger Labores Douglas BC-9 (None Borlow) None Borlows Serious (I)ury (I)ury (I) Vortex Turbulence Exposional Annerson N373AA Passenger and Pannfuld, PA Annerson	Reg	gistration	Type of Operation	Location 🖔	Operator of Aircraft	Aircraft Type	Damage to Aircraft			atalities	First Occurrence	Phase of Flight
N330ME Passenger and Planfield, PA Midwest Douglas DC-9 None Serious Injury 0 Vortex Turblence N373AA Passenger London, England Anners Boeing 767-300 Substantial Parsonger Infall Encounter N656UA Passenger Las Vegas, NV Anners Anthos Industrie A-320, None Serious Injury 0 Infall Encounter N656UA Passenger Climax, CO United Air Boeing 757-222 None Serious Injury 0 Infall Encounter N656UA Passenger Climax, CO United Air Boeing 757-222 None Serious Injury 0 Infall Encounter N433AA Passenger Climax, CO Lines MCDomel Douglas None Serious Injury 0 Infall Encounter N433AA Passenger Raheeth, NC Annersa MCDomel Douglas Substantial None Dongs Only Infall Encounter N285F Cargo Sharron, Lebrad Annersa MCDomel Douglas DC	8/N			a toron orthogo	American Trans Air	Boeing 727-200	None					Standing
National Passenger Condon, England American Desired 767-300 Substantial Damage O Concurrence	3				Opening des							
NSERIAM Passenger London, England Antinets			assenger and		Midwest		None				lence	Descent - Normal
N373AA Passenger Lockfor, England Anrineran Antines Boeing 767-300 Substantial Serious Damage of Injury of Miscellaneous/Other Notes and Injury of Inju						- 14 mg			T.		in.	
Miscellaneous/Other				London, England	American Airlines	Boeing 767-300	Substantial)атаде ()			
N640AW Passenger Las Vogas, NV American Arthures 232 None Serious Injury 0 InFlight Encounter N586UA Passenger Climax, CO United Air Beech 1900D Substantial None Serious Injury 0 InFlight Encounter N435AA Passenger Raleigh, NC American McDomeil Douglas None Serious Injury 0 InFlight Encounter N433AA Passenger Raleigh, NC American McDomeil Douglas None Serious Injury 0 InFlight Encounter N682DA Passenger Raleigh, NC American McDomeil Douglas None Serious Injury 0 InFlight Collision With N333AA Passenger Alatines McDomeil Douglas Substantial None Serious Injury 0 InFlight Encounter N285F Cargo Shannon, Ireland Recent Serious Serious Injury 0 InFlight Encounter N343BE Passenger		8					**					
NSBEUA Passenger Climax, CO United Air Boeing 757-222 None Serious Injury 0 In Flight Encounter	9 N640/			Las Vegas, NV	America West Airlines	Airbus Industrie A-320- 232	None					Cruise (Includes Low Altitude Straight And Level Flight)
March Passenger Climas, CO United Air Boeing 757-222 None Serious Injury 0 In Flight Encounter			200	Management of the	to the standard	4		i.		A		
Magada Passenger Milwaukee, WI Astral Auchone Beach 1900D Substantial None Serious Injury O In Flight Collision With Magada Aviation Aviation Lockheed L-188 Substantial None Serious Injury O In Flight Collision With Magada O Object Ob				Climax, CO		Boeing 757-222	None				In Flight Encounter With Weather	Cruise (Includes Low Altitude Straight And Level Flight)
N433AA Passenger Milwaukee, WI Astrain Beech 1900D Substantial None Damage 0 In Flight Collision With None N433AA Passenger Raleigh, NC American McDonnell Douglas None Serious Injury 0 In Flight Collision With Neather 10 Cargo Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage 0 In Flight Collision With Neather N285F Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage 0 In Flight Collision With Neather N385F Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage 0 In Flight Collision With Neather N335E Passenger Atlantic City, MJ USA Ja Douglas DC-9-15F Substantial None Damage 0 In Flight Collision With Neather N17321 Passenger Atlantines Continential Boeing 737-300 None Serious Injury 0			of the series									
March Passenger Raleigh, NC American McDonnell Douglas None Serious Injury 0 In Flight Encounter Aurines McBon McDonnell Douglas None Serious Injury 0 In Flight Encounter McBon			assenger	100000000000000000000000000000000000000	Astral Aviation,	Beech 1900D	Substantial				- 20	Approach
N433AA Passenger Raleigh, NC American McDonnell Douglas None Serious Injury 0 In Flight Encounter 3 N882DA Passenger and Covington, KY Lines Boeing 757 Substantial None Damage 0 In Flight Collision With Neather N285F Cargo Shannon, Ireland Renown Lockhed L-188 Substantial None Damage 0 In Flight Encounter N285F Cargo Shannon, Ireland Renown Lockhed L-188 Substantial None Damage 0 In Flight Encounter N343E Passenger Allantic City, NJ Business Saab-Scania AB None Serious Injury 0 In Flight Encounter N195US Cargo Kansas City, MO USA Jat Douglas DC-9-15F Substantial None Damage 0 In Flight Collision With N17321 Passenger Newark, NJ Continental Boeing 737-300 None Damage 0 Miscellaneous/Other Cargo Fxpress			prese				A	e e				1
N682DA Passenger and Covington, KY Lines Lines Cargo Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage O Object Object Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage O Object Object Object Cargo With Weather City, NJ Business Saab-Scania AB None Damage O In Flight Encounter In Fight Collision With Neather In Fight Cargo With Weather Cargo Cargo Kansas City, MO USA Jet Douglas DC-9-15F Substantial None Damage O Object Ob	99 N433,	AA	assenger		American Airlines	McDonnell Douglas MD-80	None	Serions			In Flight Encounter With Weather	Descent - Normal
Note Passenger and Covington, KY Delta Air Boeing 757 Substantial None Damage O In Flight Collision With Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage O In Flight Encounter Aviation Aviation Express Saab-Scania AB None Serious Injury O In Flight Collision With Weather Allantic City, MO USA Jet Douglas DC-9-15F Substantial None Damage O In Flight Collision With Weather Allantic City, MO USA Jet Douglas DC-9-15F Substantial None Damage O In Flight Collision With Weather Allantic City, MO Allantics Leave of the folion of the folio	e The Burt		clear air luibu	9	hrough 17,000	i feet mean sea level (M	(Ts					
N285F Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage 0 N343BE Passenger Atlantic City, NJ Express (Saab) 340A N195US Cargo Kansas City, MO Airines Alines Douglas DC-9-15F Substantial None Damage 0 Miscellaneous/Other Airines Airines Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other Repress (Saab) 340B N347BE Passenger Boston, MA Business (Saab) 340B N347BE Passenger Response Repress (Saab) 340B N347BE Passenger Response Response Repress (Saab) 340B	999 N682I	DA C	assenger and	Covington, KY	Delta Air Lines	Boeing 757	Substantial				In Flight Collision With Object	Takeorr - Roll/Run (Ground Or Water)
N285F Cargo Shannon, Ireland Renown Lockheed L-188 Substantial None Damage 0 N343BE Passenger Atlantic City, NJ Business Saab-Scania AB None Serious Injury 0 In Flight Encounter N195US Cargo Kansas City, MO USA Jet Douglas DC-9-15F Substantial None Damage 0 In Flight Collision With Weather N173Z1 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other N347BE Passenger Boston, MA Express (Saab) 340B Substantial None Damage 0 Miscellaneous/Other	ARA		ated into both	engenos, meaning in anti-	多麗	a to the engines.		1.0				
N343BE Passenger Atlantic City, NJ Business Saab-Scania AB None Serious Injury 0 In Flight Encounter With Weather In Fight Encounter Saab) 340A			argo	Shannon, Ireland	Renown Aviation	Lockheed L-188	Substantial					
N343BE Passenger Atlantic City. NJ Business Saab-Scania AB None Serious Injury 0 In Flight Encounter N195US Cargo Kansas City. MO USA Jet Douglas DC-9-15F Substantial None Damage 0 In Flight Collision With Mather N17321 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other (Saab) 340B		98										
M195US Cargo Kansas City, MO USA Jet Douglas DC-9-15F Substantial None Damage 0 In Flight Collision With Object N17321 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other				Atlantic City, NJ	Business Express	Saab-Scania AB (Saab) 340A	None				In Flight Encounter With Weather	Descent - Normal
N195US Cargo Kansas City, MO USA Jet Douglas DC-9-15F Substantial None Damage 0 In Fight Collision With Airlines Airlines N17321 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other (Saab) 340B	Linearity		urbulence.					in.	100	i e		
N17321 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other Airlines N347BE Passenger Boston, MA Business (Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other Express (Saab) 340B		1.0	argo	Kansas City, MO	USA Jet Airlines	Douglas DC-9-15F	Substantial	None	Damage 0		of Collision With	Approach
N17321 Passenger Newark, NJ Continental Boeing 737-300 None Serious Injury 0 Miscellaneous/Other In Continue C	i keesto	of binds in a	other direct	100	3	he subsequent partiel o	ower loss to b	off engine	. A factor	elathra to	The second secon	Chandian Canino(C) Not
N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other Express (Saab) 340B	N173	121 F	assenger	Newark, NJ	ntai	Boeing 737-300	None	100	njury		Miscellaneous/Otner	Standing - Engine(S) Not Operating
N347BE Passenger Boston, MA Business Saab-Scania AB Substantial None Damage 0 Miscellaneous/Other Express (Saab) 340B	2017	abendaria (alture to follow		eduras				3.500			
	N347	'BE F	assenger	Boston, MA	Business Express		Substantial		660		Miscellaneous/Omer	Standing - Engine(5) ivo: Operating

Appendix B - 1999 Part 121 Accidents

Phase of Flight	Landing - Roll	linkage during landing rollout, which resulted in asymmetrical decelerative action and the pilots subsequent inability to maintain directional control and quality assurance procedures. An inoperative windsock pivot point, which resulted in faulty wind direction information to the flight crew was a	Descent	countered	Landing - Roll	acid as required by his company procedures. Factors were the pilot-in-command's improper in-flight decisions, the pilot-in-command's failure to ordination, and failure.	Descent - Normal		Approach - Vfr Pattern - Downwind		Taxi - Pushback/Tow	this accident was inadequate pushback procedures by the airline which falled to provide proper assistance (wing walkers) to the tug operator.	Landing - Roll	Probable Cause: The flight crew's failure to discontinue the approach when severe thurderstorms and their associated hazards to flight operations had moved into the airport area and the crew's failure to ensure that the spoilers had extended after touchdown. Contributing to the accident were the flight crew's (1) impaired performance resulting from fatigue and the situational stress associated with the intent to land under the circumstances (2) continuation of the approach to a landing when the company's maximum crosswind component was exceeded, and (3) use of reverse thrust greater than 1.3 engine pressure ratio after landing.	Landing - Flare/Touchdown		Cruise - Normal		Descent - Normal	not illuminated.	Cruise - Normal	
First Occurrence	Loss Of Control - On Ground/Water	pliot's subsequent inabili in faulty wind direction into	In Flight Encounter With Weather	rctions to be sealed because of expected turbulence. A factor associated with the accident was the turbulence encountered	Overrun	per in-flight decisions, the	Altitude Deviation, Uncontrolled		In Flight Collision With Object		On Ground/Water Collision With Object	proper assistance (wing	Loss Of Control - On Ground/Water	severe thunderstorms and their associated hazards to flight operations had moved into the airport area and the crew's to flight crew's (1) impaired performance resulting from fatigue and the situational stress associated with the intent to lan crosswind component was exceaded, and (3) use of reverse thrust greater than 1.3 engine pressure ratio after landing	Hard Landing	Week miles.	Miscellaneous/Other		Altitude Deviation, Uncontrolled	ther conditions. Factors associated with the accident were the turbulence encountered and the seat belt sign was not illuminated	In Flight Encounter With Weather	
Total Fatalities	0	tion and the ch resulted i	0	th the accide	0	and's impro	0		0		0	d to provide	_	moved into t onal stress than 1.3 eng			0		0	countered a	0	
Accident Severity	Damage	elerative ac i polint, while	Injury	sociated w	Serions	ol-in-comm	Injury		Damage		Dатаде	which falle	Major	ations had the situati st greater i	Damage		Injury		Injury	bulence en	Injury	
Highest	None	etrical dec Isock pivol	Serious	\ lactor as	Serious Serious	ere the pik	Serions		None		None	the airline	Fatal	flight open fatigue and everse thru	None		Serions		Serious	vere the tur	Serious Injury	
Damage to Aircraft	Substantial	ed in asymm operative win	None	furbulence. /	Substantial	ss. Factors w	None	nght leg.	Substantial		Substantial	rocedures by	Destroyed	od hezards to ssulfting from d (3) use of n	Substantial		None		None	ne accident w	None	
Aircraft Type	de Havilland DHC-6- 200	Jing rollout, which result ince procedures. An Inc	Boeing 737-222	d because of expected	Saab-Scania AB (Saab) 340B	his company procedum laue.	Boeing 737	tendant to fall and break two bones in his right leg	de Havilland DHC-6- 300		Boeing 727	inadequate pushback p	McDonnell Douglas MD-82	orms and their associate impaired performance in ment was exceeded, an	Delta Air Boeing 757-232 Substantial None Damage 0 Hard Lan Lines	Se to a townspect tentum.	Boeing 747-422	m persons.	Boeing 777-222	actors associated with t	Boeing 737-3H4	illon, A factor was the turbulence.
Operator of Aircraft	Samoa Aviation,	age during lan I quality assur	Vanguard Airlines	ons to be seat	American Eagle	as required by	Continental Airlines	dant to fall and	Era Aviation		Sun Country Airlines	s accident was	American Airlines	vere thunderst ight crew's (1) sswind compo	Delta Air Lines		United Airlines	sawitch by unknown persons	United Air Lines	r conditions. F	Southwest Airlines	n, A factor was
Location				Probable Cause. The flight attendants did not follow the cockpit crews instruction	Jamaica, NY	Probable Cause. The pilot-in-command's failure to perform a missed approach as required by his comply with FAA requisitions and company procedures, inadequate clew coordination, and failure	Newark, NJ	Probable Cause. In flight encounter with turbulence which caused a flight atten	Anchorage, AK			Probable Cause: Inadequate visual tookout by the tug operator. A factor in this		Probable Cause: The flight crew's failure to discontinue the approach when se spoilers had extended after touchdown. Contributing to the accident were the flight continuation of the approach to a landing when the company's maximum chi.	June 2, 1999 N656DL Passenger Phoenix, AZ			Probable Cause: Intentional tampering/altering of a galley lift interlock microsw	Madison, WI	Probable Cause. The pilot-in-command's inadequate evaluation of the weather		Probable Cause: The pilot's inadvertent flight into an adverse weather condition
Type of Operation	Passenger	aration of the left to the airline's in	Passenger	did not follow th	Passenger	d's failure to per any procedures	Passenger and Newark, NJ Cargo	ith turbulence w	Passenger	with a bird.	Passenger and Sterling, VA Cargo	akout by the tug	Passenger	are to discontinua. Contributing to inding when the	Passenger	s and rapid tolling	Passenger	galtering of a ga	Passenger	id's inadequate i	Passenger	nt flight into an e
Registration Number	N719AS	e mechanical sep e linkage was due t	N208AU	e flight attendants	N232AE	ie pilot-in-commar ulations and com	N16703	flight encounter w	N72GC	in-flight collision	N282SC	adequate visual fo	N215AA	ne flight crew's fall ad after touchdown ne approach to a te	NeseDL	ie piidi s excessiv	N198UA	tentional tamperin	N781UA	ne pilot-in-commar	Nesosw	ne pilot's inadverte
Date	April 23, 1999	Probable Cause: The mechanical separation of the left engine beta control. The separation of the linkage was due to the airline's inadequate inspection factor in this accident.	May 5, 1999	Probable Cause: Th	May 8, 1999	Probable Cause: The comply with FAA reg	May 25, 1999	Probable Cause: In	May 25, 1999	Probable Cause: An in-flight collision with a bird.	May 28, 1999	Probable Cause: In	June 1, 1999	Probable Cause The spoilers had extende (2) continuation of the	June 2, 1999	Timeme cause.	June 9, 1999	Probable Cause. In	June 11, 1999	Probable Cause, Tr	June 25, 1999	Probable Cause: T

June 28, 1999				Aircraft		Aircraft	Injury	Severity Fatalitie	Fatalities First Occurrence	EDEL TO DODEL
	N420FE	Cargo	Manila, Philippines	Federal	Airbus Industrie A310	Substantial	Мопе	Damage 0		
Probable Cause: Not evallable	ot avoilable									
June 30, 1999	N582FE	Cargo	Manila, Philippines	Federal Express	McDonnell Douglas MD-11	Substantial	None	Damage 0	نظم ته ۱ دد	A GOVE & LANG.
Probable Cause: Not available	of evellable									
July 2, 1999	N502ME	Passenger	Milwaukee, WI	Midwest Express	McDonnell Douglas DC-9-32	Substantial	None	Damage 0	On Ground/Water Collision With Object	Standing - Engine(S) Not Operating
Probable Cause: Th	e vehide driver's	Ingovertient appli	Probable Cause: The vehicle driver's inadvertant application of the accelerator	beds while be	sedel while backing towards the aircraft					
July 8, 1999	N12221	Passenger	Atlantic Ocean	Continental Airlines	Boeing 737-824	Minor	Serions	Injury 0	In Flight Encounter With Weather	Cruise - Normal
Probable Cause: Ti	ne discrevi's inadve	Mant encounter	Probable Cause. The africents inachestant arcounter with untrecast clear air s	- Boulet						
July 15, 1999	N80057	Passenger and Jamaica, NY Cargo	(man)	American Airlines	Airbus Industrie A-300- Substantial 600ER		None	Damage 0	Hard Landing	Landing - Flare/Touchdown
Probable Cause: Im	proper use of the	flight controls by	Probable Cause: Improper use of the flight controls by the captain traines, and I	nadequate sur	pervision by the check alimen	(June				
July 24, 1999	N910AW	Passenger	Phoenix, AZ	America West Airlines	Boeing 757-2G7	Substantial	None	Damage 0	On Ground/Water	Taxi - Pushback/Tow
Probable Cause: The observations that the	e faithre of the flig s at bridge was all	ht orew and the In contact with	Probable Cause. The failure of the flight craw and the tug other to verify that the observations that the lat bridge was all in contact with the aircraft, and, self thou	e allocati was p	reporty configured for p	Aushback, Fact A created his a	ors in the	coldent were II	alricalit was properly configured for pushback. Factors in the accident were the left wing walker's failure to notify the tug driver of his set pressure on the nest of the captain created by a chain of circumstances surrounded the numerous delane.	notify the tag driver of his
July 28, 1999	N14451	Passenger		Continental	Aerospatiale ATR- Minor	Minor	Fatal	Serious 1	Propeller/Rotor Contact	ct Standing - Engine(S)
Probable Cause: Th	e station manager	's inadvertant en	Probable Cause: The station manager's inadvertient encounter with the rotating	propeller due	to his diverted attention.			Transmission and company and a second	lo Person	Operating
July 29, 1999	N707CK	Cargo		Kitty Hawk International	Boeing 747-269B	Substantial	None	Damage 0	Loss Of Engine Power(Total) - Mech Failure/Malf	Climb - To Cruise
Probable Cause: The an FAA Air Worthline	e failure of a turbir ss Directive, which	ne blade, and su called for a stre	Probable Cause. The failure of a turbine blade, and subsequent peretration of the stroud (containment ring), A factor associated with the accident was the FAA's worthiness Directive, which called for a strengthened containment ring was in complaines with the Air Worthiness Directive.	he ahroud (cor ig. The falled	italinment ring). A factor containment ring was in	r associated will compliance w	th the accit	dent was the F. Northiness Dire	AA's insufficient design stand school	the stroud (containment ring). A factor associated with the accident was the FAA's insufficient design standards/requirements addressed in rig. The falled containment ring was in complaines with the Air Worthkiess Directive.
August 7, 1999	N224SA	Passenger	Ketchikan, AK	Seaborne Aviation (de Havilland DHC. 6-300	DHC: Minor	None	Damage 0	Collision Between Aircraft (Other Than	Standing - Engine(S) Operating
Probable Cause: A 1	failure of ground he	andling personne	Probable Cause: A failure of ground handling personnel to verify a release proce	adure/directive	adura/directive, and removal of the airplane's tiedown, and subsequent collision with	plane's tiedowr	, and subs	equent collision		
August 7, 1999	N288SA	Passenger	Ketchikan, AK	Seaborne c Aviation [de Havilland DHC-6-300	Substantial	None	Damage 0	Collision Between Aircraft (Other Than Midair)	Standing - Engine(S) Not Operating
Probable Cause: A t	allure of ground he	andling personne	Probable Cause: A failure of ground handling personnal to verify a release proce	dure/directive.	and removal of a secon	nd airplane's ti	edown, an	1 subsequent c	adure/directive, and removal of a second airplane's tledown, and subsequent collision from a second airplane	Lie School page of many promoted by the promot
August 7, 1999	N68058	Cargo		Federal N Express C	McDonnell Douglas SDC-10-10F	Substantial	None	Damage 0	Airframe/Component/S ystem Failure/ Malfunction	Approach - Vfr Pattern - Final
Probable Cause: The inadequate design by the airplane manufacturer for using	e inadequate design	on by the airplan		bolts to secure	the inboard trailing edg	e flap that are	susceptible	e to stress corr.	osion cracking. Also, the stre	bolts to secure the inboard trailing edge flap that are susceptible to stress corrosion cracking. Also, the stress corrosion cracking failure of

Appendix B - 1999 Part 121 Accidents

Probable Causer. The fallant of the army service cark to maintain electron. An inchest case of the part of the care. Suptained Causer. The fallant of the army service cark to maintain electron. An inchest case of the part of the care. Suptained Causer. The fallant of the army service bronk special property of 273-222. Finals of Causer. The fallant of the army service bronk special property of the part of the care of the	300
Boeing 737-322 Minor Serious Injury 0 Vortex Turbulence Cruise (Includes Low Altitubers) Final Boeing B737-300 Substantial None Damage 0 Loss Of Engine Proved Partial) - Mech Proceedings at seal due to a manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine manufacturing defect in a bolt hose that was not detected by the engine making serious injury 0 In Fight Encounter Descent - Normal Valines Spo. 231 Boeing 737-322 Antitube industrie A None Serious Injury 0 Altifame/Component/S Descent - Normal Valines Beeling 757-237 Boeing 757-237 Boeing 757-232 None Serious Injury 0 Author Manufacturing defect in the enciple of greatly reduced of this particular nuisinow warning, a condition was the subsect of one or more of the SEAS. Languages along the person pushed for the particular serious injury 0 Author Manueuver Descent - Normal Nuithers Beeling 767-332 Boeing 767-333 Boeing 767-334 Boeing 767-334 Boeing 767-335 Boeing 767-334 Boeing 767-335 Boeing 767-335	Boeing 737-322 Minor Serious and Control of the Boeing B737-300 Substantial None utactures failure to provide adequate hole making nations for the high pressure turbine forward rotation and directives. A factor in the accident was a Airbus industrie A None Serious infines 320-231 Boeing 757-257 None Serious infines a boeing 757-257 None Serious infines and correct the long standing history of Intermittant ades to the system, which would have eliminated or correct the long standing history of Intermittant and serious in the system, which would have eliminated or correct the long standing history of Intermittant or correct the long standing history or correct the long
Failure/Maif as and the to a manufacturing defect in a both hole that was not described by the engine manufactured defect and be defected in a both hole that was not described by the engine manufactured and the adions for the high cross are unfailed forward requirements at the time the forward rotating as seal was manufactured and the adions for the high cross are unfailed forward requirements at the time the forward rotating as seal was manufactured and the adions for the high cross and unfailed forward requirements at the time the forward rotating at seal was manufactured and the adions for the high cross and defect in a both hole to consider the manufactured and the seal was manufactured and the seal was manufactured and the seal of the forward rotating at seal was manufactured and the seal of the forward rotating and the forward rotating at seal was manufactured and the consistence of the seal o	raft. Substantial Boeing B737-300 Substantial None and rotating air seat due to a manufacturing defect in ulactures failure to provide adequate hole making in the bidh pressure turbine forward rotating a Boeing 737-322 Substantial None cedures and directives. A factor in the accident was a Airbus Industrie A None Seriou infines 320-231 Boeing 757-257 None Seriou infines a Boeing 757-257 None Seriou infines to the topic standing history of Intermitten ades to the system, which would have eliminated or
red cotabling air seal due to a manufacturing defect in a bot hole that was not detected by the engine manufacturer due to inadequate under status to grow acquirers taliance to grow acquired to grow and cotable to be marking requirements at the time the forward cotating air seal was manufactured and the difference of the cotable to be an inating requirement at the time the forward cotable was manufactured and the difference of the light ones manufactured and the cotable to be a conflict between conflict was the animals size. The light tenounter in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives. A factor in the accident was the animals size and directives and directive of the size and directives. A factor in the accident was the size and directives and directive of the size and directive of	ind rotating air seal due to a manufacturing defect in ufacturers failure to provide adequate hole making in all on the hole making in a local for the high measure furthine forward rotating a Boeing 737-322 Substantial None cedures and directives. A factor in the accident was a Airbus Industrie A None Serious riflines 320-231 belts fasteried as directed by the captain, a Boeing 757-257 None Serious riflines and correct the long standing history of intermitten ades to the system, which would have eliminated or
thousing air seaf due to a manufacturing defect in a bolt hole start are not detected by the engine manufacturer due to include the thinder of the processor follows for the hole of the processor salure to provide adequate hole manufacturers at the time the forward rotating at seaf use manufacturer and the defect that includes and the contract of the processor bushback/Tow Collision With Object Taxi. Pushback/Tow Collision With Weather Collision With Collision With Collision With Object Taxi. Collisio	ulacturers failure to provide adequate hole making in the high pressure further followard notating a social being 737-322 Substantial None being 737-322 Substantial None cedures and directives. A factor in the accident was a Airbus Industrie A None Seriou infines 320-231 Serious and Boeing 757-257 None Serious infines by and correct the long standing history of Intermitten ades to the system, which would have eliminated or
Boeing 737-232 Substantial None Damage 0 Collision With Object Collision With Object Sacrous Injury 1 Designation of the Serious Injury 2 Designation of the Serious Injury 3 Designation of the Serious Injury 4 Designation of the Serious Injury 5 Designation With Cruise Inforded Serious Injury 5 Designation With Cruise Inforded Serious Injury 5 Designation With 5 Desig	Boeing 737-322 Substantial None Boeing 737-322 Substantial None Cedures and directives. A factor in the accident was a Airbus Industrie A None Serious Irilines 320-231 Belts fastened as directed by the captain. a Boeing 757-257 None Serious Irilines And correct the long standing history of Intermitten ades to the system, which would have eliminated or
Boeing 737-322 Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow ocedures and directives. A factor in the accident was the anima's use of a one person pushback procedure.	Boeing 737-322 Substantial None cedures and directives. A factor in the accident was a Airbus Industrie A None Serious infines 320-231 Bells fastened as directed by the captain. a Boeing 757-257 None Serious infines And correct the long standing history of intermitten ades to the system, which would have eliminated or
Airbus Industrie A factor in the accident was the airlines use of a one person pushback procedure. Airbus Industrie A None Serious Injury 0 In Flight Encounter Descent - Normal With Weather Boeing 757-257 None Serious Injury 0 Airframe/Component/S Descent - Normal ystem Failure/ Maifunction In the subject of one or more of the Stylem. Would have aliminated or greatly reduced the likelihood of this particular nuisance waming, and enratic behavior in this airplane's GPWS system Failure/ Maifunction. Maifunction Maifunction in the subject of one or more of the Stylem. Would have aliminated or greatly reduced the likelihood of this particular nuisance waming, and enratic behavior in this airplane's GPWS system Failure/ Mainusch faus and resolve a conflict between aircraft prior to effecting a frequency change, and the improper application of visual borror mainuscure to avoid the traffic, causing serious injury to a flight attendant. McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing Roll Conson of the center landing gear lower drag brace during tanding roll Straight And Level Flight) Boeing - Canada (de Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Airlines 220-231 Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Collision With Object Taxi - Pushback/Tow	ocedures and directives. A factor in the accident was a Airbus Industrie. A None Serious industrie A None Serious infines 320-231 Belis fastened as directed by the captain. a Boeing 757-257 None Serious infines and correct the long standing history of Intermitten ades to the system, which would have eliminated or
Airbus Industrie A None Serious Injury 0 In Flight Encounter Descent - Normal With Weather a Boeing 757-257 None Serious Injury 0 Airframe/Component/S Descent - Normal Serious Injury 0 Airframe/Component/S Descent - Normal Serious Injury 0 Airframe/Component/S Descent - Normal Malfunction Malfunction In this airplane's GPWS system reades to the system which would have eliminated or greatly reduced the likelihood of this particular nuisance wamings, and erratic behavior in this airplane's GPWS system reades to the system which would have eliminated or greatly reduced the likelihood of this particular nuisance waming a condition the material poor or greatly reduced the likelihood of this particular nuisance waming a condition that the stiblect of one or more of the SB/SL morrades Airlines Boeing 767-332 None Serious Injury 0 Abrupt Maneuver Maneuvering (Includes Dorrades the system reading gear and resolve a conflict between atroat prior to effecting a frequency change, and the improper application of visual borror maneurer to avoid the traffic, causing serious Injury 0 None Serious Injury 0 Airframe/Component/S Landing - Normal Serious Injury 0 Airframe/Component/S Landing - Normal Serious Injury 0 Airframe/Component/S Landing - Roll Serious Injury 0 Normal Serious Injury 1 Normal	Airbus Industrie A None Seriour Irlines 320-231 belts fasteried as directed by the captain. a Boeing 757-257 None Seriour Irlines in the long standing history of Intermitten ades to the system, which would have eliminated or
Boeling 757-257 None Serious Injury 0 Airframe/Component/S Descent - Normal virtines (Airframe) Serious Injury 0 Airframe/Component/S Descent - Normal virtines (Airframe) Serious Injury 0 Airframe) Airframe/Component/S Descent - Normal virtines (Airframe) Serious Injury 0 Airframe) Airframe/Component/S Serious Injury 0 Airframe/Component/S Berious Injury 1 Airframe/Compon	bells fastered as directed by the captain. Boeing 757-287 None Serious irlines y and correct the long standing history of intermitten actes to the system, which would have eliminated or
Notines Boeing 757-257 None Serious Injury 0 Airframe/Component/S Descent - Normal Serious Injury 0 Airframe/Component/S Descent - Normal Serious Injury 0 Abrupt Maneuver Maneuvering, a condition that are still standard to greatly reduced the likelihood of this particular nuisance warning, a condition that are the SB/SL updrader None Serious Injury 0 Abrupt Maneuver Maneuvering (Includes Buzzing) Serious Injury 0 Abrupt Maneuver Maneuvering (Includes Buzzing) Serious Injury 0 Airframe/Component/S Serious Injury 0 Airframe/Component/S Landing - Normal Serious Injury 0 Airframe/Component/S Landing - Roll Serious Injury O Airframe/Component/S Straight And Level Flight) Collision With Object Taxi - Pushback/Tow Collision With Object Collision With Object Collision Wi	a Boeing 757-257 None Seriou. Irlines Y and correct the long standing history of Intermitten ades to the system, which would have eliminated or
y and correct the long standing history of intermittent faults, nuisance warnings, and enratic behavior in this airplane's GPWS system adds to the Standing history of intermittent faults, nuisance warnings, and enratic behavior in this airplane's GPWS system safe system, which would have eliminated or greatly reduced the likelihood of this particular nuisance warning, a condition that safe solid serious injury 0 Abrupt Maneuver Maneuver Maneuvering (Includes Buzzing) ordinate and resolve a conflict between alroraft prior to effecting a frequency change, and the improper application of visual arms landing as frequency change, and the improper application of visual injury 0 Airframe/Component/S Landing - Normal McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing - Roll Straight And Level Flight) a McDonnell Douglas a failure of the center landing gear lower drag brace during landing roll straight And Level Flight) a Airframe/Component/S Cruise - Normal None Damage 0 In Flight Collision With Object Taxi - Pushback/Tow Collision With Object	y and correct the long standing history of intermitten ades to the system, which would have eliminated or
ritines Boeing 767-332 None Serious Injury 0 Abrupt Maneuver Maneuvering (Includes Buzzing) Cordinate and resolve a conflict between aircraft prior to effecting a frequency change, and the improper application of visual natural ratios. Causing serious injury 0 In Flight Encounter Cruise - Normal McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing - Roll ystem Failure/ Be fanding gear, which caused a failure of the center landing gear lower drag brace during landing roll Straight And Level Flight) Airbus Industrie A Substantial None Damage 0 In Flight Collision With Cruise (Includes Low Altitude Object Taxi - Pushback/Tow Collision With Object Collisi	
Airbus Industrie and resolve a conflict between aircraft prior to effecting a frequency otherge and the improper application of visual apt maneuver to avoid the traffic, causing serious injury to a flight attendant and africus Industrie 319 None Serious Injury 0 With Weather Cruise - Normal With Weather Cruise - Normal With Weather Information Substantial None Damage 0 Airframe/Component/S Landing - Roll standing gear, which caused a failure of the center landing gear lower drag brace during landing roll Havilland) DHC-8-102 Bell None Damage 0 In Flight Collision With Cruise (Includes Low Altitude Object Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Collision With Object Collision With Object	nes Boeing 767-332 None Seriou
Airbus Industrie 319 None Serious Injury 0 In Flight Encounter Cruise - Normal With Weather McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing - Roll ystem Failure/ MD-11F MD-11F MD-11F With Weather Component/S Landing - Roll ystem Failure/ y Boeing - Canada (de Substantial None Damage 0 In Flight Collision With Cruise (Includes Low Altitude Object Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Collision With Object Collision With Object	ordinate and resolve a conflict between aircraft pricrupt maneuver to avoid the traffic, causing serious
McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing - Roll MD-11F MD-11F MD-11F ND Substantial None Damage 0 Airframe/Component/S Landing - Roll Straight And Level Flight) Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Collision With Object Taxi - Pushback/Tow Collision With Object Taxi - Pushback/Tow	Airbus Industrie 319 None Seriou 131
McDonnell Douglas Substantial None Damage 0 Airframe/Component/S Landing - Roll MD-11F MD-11F WD-11F WD-11F	
er landing gear, which caused a failure of the center landing gear lower drag brace during landing roll 19 Boeing - Canada (de Substantial None Damage 0 In Flight Collision With Cruise (Includes Low Altitude Damage 1) 1 Havilland) DHC-8-102 Straight And Level Flight) 1 Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Indus Industrie A Substantial None Damage 0 Collision With Object Industrie Indust	McDonnell Douglas Substantial None MD-11F
Havilland) DHC-8-102 None Damage 0 In Flight Collision With Cruise (Includes Low Altitude Canada (de Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow Collision With Object	er landing gear, which caused a failure of the cente
Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow lines 320-231 Collision With Object	Boeing - Canada (de Substantial Havilland) DHC-8-102
Airbus Industrie A Substantial None Damage 0 On Ground/Water Taxi - Pushback/Tow lines 320-231 Collision With Object	
	Airbus Industrie A Substantial None rlines 320-231

Date	Re 7	Registration Number	Type of Operation	Location	Operator of Aircraft	Aircraft Type	Damage to Aircraft	Highest Accident Injury Severity		Total Fatalities	First Occurrence	Phase of Flight
October 17, 1999	9 N581FE		Cargo	Subic Bay, Philippines	Federal Express	McDonnell Douglas MD-11F	Destroyed	Minor	Major 0			
Probable Certies - Not grediable	Not avail	9										
November 5, 1999 N784UA	99 N784	With Pa	Passenger and Cargo	Passenger and London, England Cargo	United Airlines	Boeing 777-200	Substantial	None	Damage 0			
November 7, 1999	99 N602GC		Cargo	Honolulu, HI	Gemini Air Cargo	McDonnell Douglas DC-10-30F	Substantial	None	Damage	Z 4	Near Collision Between Climb - To Cruise Aircraft	limb - To Cruise
Probable Cause	The plot	lli-commund	Initiated en ev	nobable Cause . The pilot-th-command initiated an evasive maneaver overing	nesis michiel	collision. The amplane ontered a preside formet, which resulted in buckling of the elevator skins	ntered a preste	Daillet, wi	leh resulted	in buckling	of the elevator stime	
November 27, 1999 N521DA	999 N521	DA	Passenger and Flushing, NY	Flushing, NY	Delta Air	Boeing 727-232	Substantial None		Damage 0	O	On Ground/Water T	Taxi - Pushback/Tow
Probable Cause oversight or the	The use defined	of a defective	Cargo e tow ter, due sersorinal who i	Caroo Probable Cause : The use of a defective tow bar, due to the last, of an extequal oversight by the arthre on the contract response who inspected the task has "A	Lines Presection by freso, was the	Lines to inspection by codingt personnel, the settings lact of an adequate A fection was the sollier from specified shear pins used in the tow ber	e alemene Bock o Teest piece used	an adequ	ate preventa	O mainte	Lines Collision With Object Inspection by contract parsonnel, the serties fact of an adequate personnel, the investment of the box of and the lack of the serties that the box and the lack of the serties that serties process.	Par en the local
December 13, 1999 N786UA	982N 666		Passenger and	Passenger and London, England	United Air	Boeing 777-222	None	Serious Injury	njury 0	g is no self-tree		p - Authors our
	Not aveil		Cargo		Lines							
December 17, 1999 N995CF	966 N995		Cargo	Indianapolis, IN	1412	Douglas DC-8-62	Substantial	None	Damage 0	0	On Ground/Water T	Taxi - To Takeoff
Probable Cause. The Right crew/insjudged the Charance between the unselfethistations candidon that extend on the companied onto area.				T OFF	Worldwide Ang and the rad	ome of the parked ain	raft. A factor a	o called v	diffice focal	ord was the	Worldwide Collision With Object A lactor associated with the accident was the ground handling contractor falled to dentify the	corrected to retently the

1999 SCHEDULED PART 135 ACCIDENTS

light	down		snow and Ice	Altitude Straight	and mist, and	To 1St Power Altitude;		Mitude Straight		To 1St Power Mitude; g)	T.	utitude Straight	Altitude Straight		Aftitude Straight	nd king	Ititude Straight.		(To 1St Power Altitude;		Ititude Straight
Phase of Flight	Landing - Flare/Touchdown	Landing - Roll	nd the presence o	Cruise (Includes Low Altitude Straight And Level Flight)	S Correlating of Since	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind I en)		Cruise (Includes Low Altitude Straight And Level Flight)		Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Leg)		Cruise (Includes Low Altitude Straight And Level Flight)	Cruise (Includes Low Altitude Straight And Level Flight)		Cruise (Includes Low Altitude Straight And Level Flight)	g of low cellings a	Cruise (Includes Low Altitude Straight And Level Flight)		Takeoff - Initial Climb (To 1St P Reduction Or Pattern Altitude; Includes Crosswind Leg)		Cruise (Includes Low Altitude Straight And Level Flight)
First Occurrence		Lan	nd condition, a	unter		FF 100			8 4	Loss Of Control - In Tak Flight Red Incli						eather consisti	unter	l almame icing	M-7700 00.71	- Salar Constitution Constitution	5
	In Flight Collision With Terrain/Wate	Overrun	Work a lat w	In Flight Encounter With Weather		Loss Of Engine Power		In Flight Collision With Terrain/Water		Loss Of C Flight		In Flight Collision With Object	In Flight Collision With Object		In Flight Encounter With Weather	e adverse w	In Flight Encounter With Weather	enditions, and	Forced Landing		In Flight Encounter With Weather Ow covered betrain,
est Total y Fatalities	0	0	he accident	†				, -		က		0	0		0	accident we	0	ng of icing co	O 1 1 van Florete Base	Committee of the committee of	6 . 10g. and a r
o Highest Injury	None	None	ų.	Fatal	Fee	Fatal		Fatal		Fatal		None	None		None	on the	None	r consistir	None		Fatal W cellings
Damage to Aircraft	Substantial	Substantial	he rumay. F	Destroyed		Destroyed		Destroyed	wous pure sou	Substantial		Substantial	Substantial		Substantial	ndillons. Fed	Substantial	iverse weathe	Substantial		Destroyed
Aircraft Type	Piper PA-32-301	Piper PA-31-350	nachdown point an	Cessna 207A		Piper PA-31-350		Piper PA-32R-300	cident more law cells	Piper PA-32-260		Piper PA-31	Piper PA-31-T3		Cessna 207	adverse weather or	Piper PA-32-300	the accident were a	Cessna 208B	the airplane.	Cessna 207
Operator of Aircraft	Peninsula Airways Piper	Yute Air Alaska	and he fallore to attain the proper trachitown point on the namesy. Factors in the accident ware a fall wind condition, and the presence of snow and los	Village Aviation, Doing Business As Camai Air	encoderal continue, spellal facolarishm, and an inches as and factors in the accident was mostles conditions considing of snow and mist, and	Larry's Flying Service		Servant Air	ether conditions. Factors in the accident were law cellings and snow	New England Airlines		FS Air Service	Cape Smythe Air Service		Hageland Aviation Services	Probable Calise. The place shadon of the weather, and his decision to inflate flight into adverse weather conditions. Factors in the accident were adverse weather consisting of low cellings and long conditions, tradequate sustains to comean management, and affirms taken.	Russian Mission, Bidzy Ta Hot Aana, doing AK business as Tanana Air Service	Probable Cause. The plots continued flight into adverse weather, and an inadvertent stall. Factors in the accident were adverse weather consisting of icing conditions, and airframe icing.	Arctic Air Group, Doing Business As Arctic Circle Air Service	eriove snow and airframe Ice from the airplane	Grant Aviation Cessna 207 Destroyed Fatal 6 In Flight Encounts With Weather Sections Associated with the accident were low cellings, tog, and anow-covered terrain.
Location	Chefornak, AK Peninsula	Chevak, AK		Kotzebue, AK	on two hadriness or	Tanana, AK		Bettles, AK	menn adverse waalher cond	Passenger Westerly, RI	etplans doing a	Soldotna, AK	Gambell, AK		Bethel, AK	n of the weather, enecesient, and	Russian Mission, AK	dverse weather, a	Bethel, AK	nd his fallure to n	Bethel, AK inio Instrument m
Type of Operation	Passenger and Cargo	Passenger and Cargo		Passenger and Cargo		Passenger and Cargo		Passenger and Cargo	or Both into	Passenger	sound of the	Passenger and Cargo	Passenger	with a bird	Passenger	ate evaluation	Passenger	d Ilight Into a	Passenger and Cargo	ate preflight e	Passenger d Virik ilighi
Registration Number	N81844	N59985		N73188	partie con	N41078	Belomined	N9166K	place confine	N4830S		N74923	N220CS	affight collect	N207SE	Particularies	N31606	pilofs continua	N5187B	pilofs insdequ	N1747U piloris continue
Date	March 27, 1999	April 11, 1999	Probable Cause. The place (redeglink by ages of the turbury terbine.	April 14, 1999	Probable Casas The lat forting conditions	June 11, 1999	Pidistik Cluse: Unclement	September 3, 1999	Probable Calende Mispate confine	September 5, 1999	Probability Courte. The slott bas of somed of the applications about a family	October 11, 1999	October 15, 1999	Probable Carea An Builder reliation with This	October 27, 1999	Probable Cause. The place fracestate eviduation of the weather, and his deci- conditions, hadecusis susservision by compare menoment, and airframe folio-	October 28, 1999	Probable Cause: The	December 6, 1999	Probable Cause: The pilor's inscequate preflight and his failure to remove snow	December 7, 1999 N1747U Passenger Bethel, AK Grant Avia Probable Cause: The plack continued VFR fight into Instrument meteorological

Appendix - C 1999 Scheduled Part 135 Accidents

Jught	(To 1St Power	Altitude;	eg)
Phase of I	Loss Of Control - In Takeoff - Initial Climb (To 1St Power	Reduction Or Pattern Altitude;	Includes Crosswind Leg)
First Occurrence	Loss Of Control - In	Flight	
Total Fatalities	0	***********	
Highest Injury	Minor	tere in part	
Damage to Aircraft	Substantial Minor	m/ ~/****	
Aircraft Type	Cessna T207A		all/mush.
Operator of Aircraft	Grant Aviation	m, a real agents	prior to flight, and an inadvertent st
Location	Bethel, AK	And the Servings	t from the airplane
Type of Operation	Passenger Bethel, AK		o remove fros
Registration Number		Seption Spools	pilors failure t
Date	December 24, 1999 N1864		Probable Cause: The

1999 Nonscheduled Part 135 Accidents

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest	Total Fatalities	First Occurrence	Phase of Flight
January 5, 1999	N6GR	Passenger	Anchorage, AK		Airplane	Piper PA-31-350	Substantial	None	0	On Ground/Water Collision With Object	Taxi - From Landing
Probable Cause: Th	re failure of the c	inver of a vehicle	Probable Cause: The failure of the driver of a vehicle to maintain an adequate	uate visual lookout.	ACCEPTANCE OF COMPANY OF STREET	en de la companya de	entratemental and the second s	Constitution of the last		Tarihi da	Name of the annual content of the annual of
January 6, 1999	N50BA	Passenger	Plymouth, IN	Byerly Aviation	Airplane	Rockwell 500-S	Substantial	None	0	Loss Of Control - On Ground/Water	Landing - Roll
Probable Cause: Th	re pilot's failure i	o maintain directi	onal control of the air	Probable Cause. The pilot's failure to maintain directional control of the amplana while landing. Factors associated with the accident were the tallwind condition and the pilot landing in the wrong direction.	rs associate	d with the accident	were the talk	find condi	ion and the	plice landing in the win	ong direction.
January 10, 1999	N6312H	Mail	Quinhagak, AK	Village Aviation	Airplane	Cessna 207	Substantial Minor	Minor	0	Loss Of Engine Power Approach	er Approach
Probable Cause Lo manufacturer's made	es of engine po-	wer due to fractur introl standards, t	Probable Cause: Loss of engine power due to fracture of the engine crankehal manufacturer's inadecuals quality control standards; tress, and snow-covered t		r's Improper	manufacturing pro	cadure during	angine as	sembly. Fa	dons associated with	, and the manufacturer's improper manufacturing procedure during engine assembly. Factors associated with the actident were the analy.
January 12, 1999	N19TA	Cargo	Chevak, AK	Arctic Transportation Services	Airplane	Cessna 207	Substantial	None	0	In Flight Encounter With Weather	Descent - Normal
Probable Cause: Th	e plots continu	ed flight into adve	Probable Cause: The pliot's continued flight into adverse weather conditions.	ns. Factors associated will	the accider	it were freezing rail	n, an accumul	ation of lo	s on the win	gs and allerons, and o	Econs associated with the accident were freezing rain, an accumulation of ice on the wings and allerons, and diminished directional control.
January 14, 1999	N882BB	Passenger and Cargo	Passenger and Youngstown, OH Cargo	Hawkeye Charter Service	Airplane	Cessna 421B	Substantial	None	0	On Ground/Water Encounter With	Landing - Roll
Probable Cause: Th	e pilot's failure t	o maintain aircraf	Probable Cause: The pilot's failure to maintain aircraft control. A factor was the loy runway.	s the icy runway.	Chinada amoradamina	And the state of t		AND MICH STATE MARKET	Transfer a Michigan annua	Weather	and the contract of the contra
January 28, 1999	N130F	Cargo	Chicago, IL	Airnet Systems	Airplane	Gates Learjet 35	Substantial	None	0	Loss Of Control - In Flight	Landing - Flare/Touchdown
Probable Cause: Th	e second pilot's	failure to maintain	n adequate airspeed	Probable Cause: The second pilot's failure to maintain adequate airspeed which resulted in an inadvertent stall mush	irtent stall m	ush.	diameter district of the contract of the contr	روياند مونب والدوية والمائد والد	A STATE OF THE PROPERTY OF THE	Control of the Contro	The state of the s
February 2, 1999	N980FE	Cargo	Cody, WY	Corporate Air	Airplane	Cessna 208B	Substantial	None	0	Nose Down	Taxi - To Takeoff
Probable Cause: Th	e pilot's inability	to maintain aircra	Probable Cause: The plicks inability to maintain aircraft control due to unfavora	worable winds conditions.				All Marie Street and Street		And a second	Township of the content of the conte
February 11, 1999 N31240 Cargo Probable Cause: The plots descent below the mining including weather conditions of low callines and written if	N31240 Pilot's descent	Cargo below the minim	February 11, 1999 N31240 Cargo Saint Mary's, AK Alt Probable Cause. The plot's descent below the minimum descent attlade on the night weather conditions of low cellines and without	Alaska Central Express Airplane in the tratument approach. Factors	Airplane Factors we	Beech 1900C re pilot fatigue resu	Substantial	Serious pliot's rest	0 period bein	In Flight Collision With Terrain/Water g Interrupted by sche	ska Central Express Airplane Beech 1900C Substantial Serious 0 In Flight Collision With Approach - Fat/Outer Terrain/Water Marker To Threshold (Ifr) Instrument approach. Factors were plicit fatigue resulting from the plicits rest period being interrupted by scheduling discussions and the
February 13, 1999	N 220НН	Passenger	Hockley, TX	Hermann Hospital Life Flight, doing business as Hermann Life Flight	Helicopter	Eurocopter BK 117 B-1	Substantial	None	0	In Flight Collision With Object	In Flight Collision With Takeoff - Initial Climb (To Diject 1St Power Reduction Or Pattern Altitude; Includes Crosswind Led;
Probable Cause: The	e pilot's failure to	naintain dearar	nce with the power lin	Probable Cause: The pilot's failure to maintain clearance with the power lines. A factor was the sunglare reducing the pilot's visibility	are reducing	the plicts visibility					
February 16, 1999	N711TE	Passenger	Van Nuys, CA	Trans Exec Air Service	Airplane	Grumman G-1159 Substantial		None	0	Overrun	Landing - Roll
Probable Cause: The pilot performed inadequate in fight planning and decided under the encountered fight conditions. This led to a long landing, resulting in a	s pilot performed d flight condition	Inadequate in This led to a fi	ght planning and dec ong landing, resulting	lood to continue the approach and landing with ex in an overrun and collision with parked airplanes	ich and land with parked	ing with excessive	airspeed. The	pilot falle	wollay of p	ompany directives, w	to continue the approach and landing with excessive alrapeed. The pilot falled to follow company directives, which required a go around in overnun and collision with parked airplanes
February 17, 1999	N15MA	Cargo	Nassau, Bahamas	Florida Air Cargo	Airplane	Douglas DC-3C	Substantial	None	0	Nsch	
Probable Cause: Not available.	t available.		Application of the second control of the control of	er stringer angeste er en			A CONTRACTOR OF THE PROPERTY O	Description and description			
February 28, 1999	N2313Z	Passenger	Stuart, FL	Stuart Jet Center	Airplane	Piper PA-23-250	Substantial	None	0	In Flight Encounter With Weather	Landing - Flare/Touchdown
Probable Cause: The inadequate touchdown resulting in a hard-landing on the r	s inadequate tou	chdown resulting	in a hard landing on	the nose landing gear and subsequent structural demage	subsequent	structural damage.			A CONTRACTOR OF THE PARTY OF TH		
March 3, 1999	N756AV	Cargo	Cascade, ID		Airplane	Cessna TU206G	Substantial	None	0	Nose Over	ding - Roll
Probable Cause: Uni	sultable terrain fi	or landing was se	ilected. Snow covere	Probable Cause: Unsultable terrain for landing was selected. Snow covered airstrip was a factor.		Manual Communication Communica	Activities and the second second	مراسطه الاستكاف د	A See State County of the State	Section 17 (1988) M. Section and Section 1888 (1988) Company of the Company of th	TO STATE OF THE PROPERTY OF TH

Appendix D - 1999 Nonscheduled Part 135 Accidents

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Phase of Flight	Engine(S)		des Runav d-Propping			ld dumg 1	ormal		Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)	tension.	Aodify With al Code 24 30)	2 to 10 to 1	Landing - Flare/Touchdown		ing (Includ		Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Lea)	ecting rod	Takeoff (Modify With Operational Code 24563, If On Touch & Go)	go-around	Cruise (Includes Low Altitude Straight And Level Flight)		- Vfr Patte oach	
Pha	Standing - Engine(S) Operating		Taxi (Includes Runaway While Hand-Propping)	*	Climb	y windshie	Cruise - Norma		Takeoff (Modify With Operational Code 24 On Touch-&-Go)	g-steel ex	Landing (Modify With Operational Code 24563, If Touch-&-Go)		Landing - I	mdraft	Maneuvering (Includes Buzzing)		Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Lea)	f the conn	Takeoff (Modify Operational Cod	le engine (Cruise (Inc Altitude St Flight)		Approach - Vfr Pattern - Final Approach	
First Occurrence	Collision Between Aircraft (Other Than Midair)		Collision Between Aircraft		In Flight Encounter With Weather	suited in fight into king weather conditions. A factor related to the accident was restricted visibility through the tay windshield during landing	Loss Of Engine Power(Partial) - Nonmechanical	asons. A factor was the pilor's fallure to maintain directional control of the aircraft during landing flare/touchdown	Loss Of Control - On Ground/Water	e flat design of the sprir	In Flight Encounter With Weather		Undershoot	ure to attain the proper touchdown point and the fightcrew's delay in taking remedial action. A factor was the downdraft.)f Control - In	ச ருள்.	Loss Of Engine Power(Total) - Mech Failure/Malf	ersonnel to properly torque a connecting rod bolt during an engine overhald, and the subsequent disconnection of the connecting rod bolt and	Loss Of Engine Power(Partial) -	preflight inspection that resulted the subsequent loss of engine power, and his in-flight decision to attempt a single engine go-around with full	Loss Of Engine Power Cruise (Includes Low Altitude Straight And Flight)		f Control - On Water	idilions.
Total Fatalities	0		0		0	as restricte	0	raft during l	7	ictor was th	0		0	nedial action	0	e loss of rot		nd the subs	0	s in-flight de	0		0	ss wind cor
Highest Injury	None	and the second	None		None	accident w	None	of the alro	Fatal	tributing t	None	'n	Minor	taking rer	None	er from th	Minor	verhaul, a	Minor	ver, and hi	None	aason,	Minor	shong cre
Damage to Aircraft	Substantial		Minor		Substantial	lated to the	Substantial	ional control	Destroyed	keoff. A con	Substantial	covered lens	Substantial	ew's delay in	Substantial	tude to recov	Substantial	g an engine c	Substantial	of engine pow	Substantial	determined re	Substantial Minor	ctor was the
Alrcraft Type	Swearingen SA226TC	lision with N151SA.	Swearingen SA226TC	lision with N151SA.	Piper PA-32R-300 Substantial	nditions. A factor n	Cessna 320D	re to maintain direct	Eurocopter AS- 350-B2	oor handle during to	Eurocopter AS- 350-B2	nditions, and snow-	Gates Learjet 35A Substantial	point and the fightor	Robinson R-22	the inadequate alti	Piper PA-32R	acting rod boil durin	de Havilland DHC- Substantial 6-200	e subseduent loss c	Bell 206L-1	ine power for an uni	Beech 58	y into the wind. A fa
Category	Airplane	bsequent co	Airplane	psedneut co	Airplane	g weather co	Airplane	e pilot's fallu	Helicopter	The hatch o	Helicopter	whiteout co	Airplane	touchdown	Helicopter	accident wat	Airplane	rque a conn	Airplane	at resulted th	Helicopter	a loss of eng	Airplane	on a runwa
Operator of Aircraft		e taxiing, causing the subsequent collision with N151SA	Superior Aviation	e taxing, causing the subsequent collision with N151SA	Ram Air Frieght	resulted in flight into Ich	Star West Aviation	easons. A factor was th	Eugene Is. 193, Gulf Petroleum Helicopters of Mexico	Probable Ceuse. The loss of control as a result of the spring-steel extension becoming entangled with the hatch door handle during takeoff. A contributing factor was the fial design of the spring-steel extension		ed with the accident were whiteout conditions, and snow-covered terrain	Frazier Group	300 mm [D1	Chena River Aviation	wind turn. A factor in the accident was the inadequate aithtude to recover from the loss of rotor rpm			Carib-Air Cargo		Air Flite	nmand. A factor was the loss of engine power for an undetermined reason.	Paragon Air Express	g cross wind, rather then on a runway into the wind. A factor was the strong cross wind conditions.
Location	Denver, CO	OKOUT WIL	Denver, CO	Probable Cause: The pilot of N328BA's failure to maintain visual lookout while	Richmond, VA	Probable Cause. The pliots inadequate preflight planning/preparation which re	Broomfield, CO	Probable Cause: A partial loss of power on the left engine for undetermined re-	Eugene Is. 193, Gulf of Mexico	spring-steel extension	Girdwood, AK	Probable Cause. The pilot's misjudged flare while landing. Factors associated	Rogers, AR	Probable Cause. The pilot's fellure to maintain the proper descent rate, his fail	Fairbanks, AK	Probable Cause. The failure of the pilot to maintain rotor rom during a downwi	Fairbanks, AK	Probable Cause: The loss of engine power due to the failure of maintenance p connecting rod.	Lantana, FL	Probable Cause: The pilot's failure to secure the engine oil filler cap during the wing flaps extended.	Shawnee, OK	Probable Cause: The Improper flare during an autorotation by the pilot-in-com	Nashville, TN	Probable Cause. The pilots inflight decision to land on a runway with a strong
Type of Operation	Cargo	A's failure to mai	Cargo	A's fallure to mai	Cargo	ate preflight plan	Cargo	wer on the left er	Passenger	as a result of the	Passenger	ed flare while lan	Passenger	o maintain the pr	Passenger	ilot to maintain n	Cargo	power due to the	Passenger and Lantana, FL Cargo	o secure the eng	Passenger	during an autorc	Passenger and Nashville, TN Cargo	decision to land
Registration Number	N151SA	pliot of N328B	N328BA	pilot of N328B	N5454F	pilotis inadequ	N4127T	irtial loss of po	N6100R	loss of control	N197EH	pilot's misjudg	N508GP	pitot's failure t	N8367F	failure of the p	N1942H	loss of engine	N838MA	pliots failure t	N255AL	improper flare	N80UL	pilot's inflight o
Date	March 5, 1999	Probable Cause: 1he	March 5, 1999	Probable Cause: The	March 9, 1999	Probable Cause. The	March 15, 1999	Probable Cause: A pa	March 17, 1999	Probable Cause. The	March 17, 1999	Probable Cause: The	March 30, 1999	Probable Cause: The	April 1, 1999	Probable Cause: The	April 5, 1999	Probable Cause: The connecting rod.	April 5, 1999	Probable Cause: The wing flaps extended	April 5, 1999	Probable Cause: The	April 6, 1999	Probable Cause: The

Date	Registration Number	Type of Operation	Location	Operator of Aircraft	Category	Aircraft Type	Damage to Aircraft	Highest Total Injury Fatalities	First Occurrence	Phase of Flight
April 19, 1999	N414JA	Mail	Kongiganak, AK	Larry's Flying Service	Airplane E	Britten-Norman BN-28-21	Substantial	None 0	On Ground/Water Encounter With Terrain/Water	Landing - Roll
April 20, 1999 N744MA		Cargo	Fort Lauderdale, FL	Execstar Aviation	Airplane	Cessna 402B	Substantial	Minor 0	Loss Of Engine Power(Total) - Nonmechanical	Approach
April 27, 1999	N819BW	Passenger and Cargo		Texas Air Ch	arters Airplane C	Cessna 402C	Destroyed	Fatai 1	Airframe/Component/ Descent - Normal System Failure/Malfunction	Descent - Normal .
April 27, 1999 N3125N Passenger Healy, AK	N3125N	Passenger	Healy, AK	Forty Mile Air	Airplane d	de Havilland DHC- Substantial 3		None 0	Loss Of Control - On Ground/Water	Landing - Roll
April 27, 1999	N93311	Passenger	April 27, 1999 N93311 Passenger Juneau, AK	Vard Air Inc. Andrews	Airplane C	Cessna 185	Substantial	Airplane Cessna 185 Substantial Serious 0 Loss Of E Power(To Power(To Eailure)M. Failure/M. Sociated with this accident were the for eithure at which the failure occurred in	e a a	ine Approach - Vir Pattern -) - Mech Final Approach ing in bask overbask of the pitot; and
June 1, 1999	N1929T	Passenger matriain rater R	¥	Josh Joh Susiness Chopper	Helicopter Robinson R22	3		None 0	Loss Of Control - In Flight	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
June 8, 1999 Probable Carree The	N440AB Diet Geston	Passenger Geografian com	June 8, 1999 N440AB Passenger Fort Lauderdale, FL P Probable Control of the Contr	Air Sunshine Windown Which rest e let side of the run	Airplane C	Airplane Cessna 402C Substantial None 0	Substantial Substa	None 0	On Ground/Water Collision With Object	Takeoff (Modify With- Operational Code 24563, If On Touch-&-Go)
June 9, 1999 N265A Probable Cause: The pilot's recise/boadens in the beload.	N265AH plofs selection	Passenger i of an uneultable	June 9, 1999 N265AH Passenger Juneau, AK E Probable Cause: The pilor's selection of an unaultable landing/lakeoff area, an rode/houden in the telecoff area.	Era Aviation and his fallure to maintain	Helicopter Bell 206B	ieli 206B m terrain. Factors	Substantial Minor associated with the	Minor 0 in the accident are	ra Aviation Helicopter Bell 2068 Substantial Minor 0 In Flight Collision With Hover - In Ground Effect Terrain/Water d his failure to maintain clearance from terrain. Factors associated with the accident are the confined/congested. landing/takeoff area, and	In Flight Collision With Hover - In Ground Effect Terrain/Water e confined/congested landing/takeoff area, and
June 9, 1999 Probable Cause: The in marginal weather.	N6099S pilot's continue nd the Tier ligh s inadequate au	Passenger d VFR flgnt into a fifting backing to wr	June 9, 1999 N6099S Passenger Juneau, AK C Probable Cause: The plot's continued VFR fight into adverse weather, spatial in marginal weather, and the Tat'l Briting leading to writteen conditions. Additional the FAA and the FAA's indepotate survisions of the emergency instrument.	oastal Helicopters disorientation, and fall lonel recors were the	Helicopter El 39 ms to melintaln slock of in	Eurocopter AS- 350BA In aircraft control E	Destroyed Fatal 7 Fedors associated with the	Fatal 7 sted with the accida fall experience, fract		inter Maneuvering (Includes Buzzing)
June 25, 1999 Probable Cause: The	N3019W poor in flight	Passenger and Cargo sather evaluation	June 25, 1999 N3019W Passenger and Munson, FL A Cargo Cargo Probable Cause The poor in flight wealther evaluation by the pilot-in-comman	Aerocenter ind and his operation of the	Airplane Bo e airplane at	Beech C90	Destroyed F	Fatal 2 an the design mane	June 25, 1999 N3019W Passenger and Munson, FL Aerocenter Airplane Beech C90 Destroyed Fatal 2 In Flight Encounter Descent - Normal Carpo Carpo Probable Cause. The poor in-flight weather evaluation by the pilot-in-command and his operation of the airplane at an indicated airspeed greater than the design maneuvering speed (Vs) in a thunderstorm contrary to the process of the pilot in the process of the pilot in the process of the pilot in the pilot in a thunderstorm contrary to the pilot in the p	June 25, 1999 N3019W Passenger and Munson, FL Aerocenter Airplane Beech C90 Destroyed Fatal 2 In Flight Encounter Descent - Normal With Weather Cargo Probable Cause. The poor in-flight weather evaluation by the pilot-in-command and his operation of the airplane at an indicated airspeed greater than the design maneuvering speed (Va) in a thunderstorm contrary to the
June 29, 1999	N17915	Cargo	Atlanta, GA	Paragon Air Express	Airplane Be	Beech BE-58	Destroyed	Fatal 2	Loss Of Engine Power	Loss Of Engine Power Takeoff - Initial Climb (To ISP Power Reduction Or Pattern Altitude; Includes Crosswind Leg)
Probabe Cause. The loss of engine power to underefinitied teasons, and the	ioss of engine p	CHANGE TOK UNCESTED	Mined reasons, and u	le pliot s'italitie to tolichi emergency procedules that resulted in the uncontrolled collision with trees	имегрепсу рго	cedlines inat resul	ed in me und	ontrolled collision w	III) traes.	

Appendix D - 1999 Nonscheduled Part 135 Accidents

Phase of Flight	Taxi - From Landing	Landing - Roll	Ameriflight Airplane Piper PA-31-350 Destroyed Fatal 1 In Flight Collision With Climb - To Cruise Terrain/Water Om terrain while operating under visual flight rules. Contributing factors were the improper issuance of a suggested heading by air traffic contributing and falling of the resource of a suggested heading by air traffic contributing and falling of the resource of a suggested heading by air traffic contributing and falling of the resource of a suggested heading by air traffic contributing and falling of the resource of a suggested heading by air traffic contributing and falling of the resource of a suggested heading by air traffic contribution.	Climb - To Cruise	In Flight Collision With Maneuvering (Includes Terrain/Water (Buzzing)	Twin Cities Air Service Airplane Cessna T303 Substantial Serious 0 Loss Of Engine Cruise (Includes Low Power(Total) - Mech Altitude Straight And Level Failure/Malf Flight) decision height without the runway erwironment in sight, and his failure to execute a missed approach. A factor in the accident was the failed	Q&S Aviation Airplane American General Substantial None 0 Vortex Turbulence Approach - Vfr Pattern - Aircraft AG5B Encountered Downwind Lurbulence from a heavy transport aircraft, which was landing at another airport. A factor in the accident was the tower controller's failure to aircraft later checked in on tower frequency.	Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Altitude; Includes Crosswind Lea)	In Flight Collision With Takeoff (Modify With Object Operational Code 24563, If On Touch-&-Go)	Approach - Vfr Pattern - Final Approach	Loss Of Engine Power Cruise (Includes Low Altitude Straight And Level Flight)
First Occurrence	On Ground/Water Collision With Object	Gear Collapsed	In Flight Collision With Climb - To Cruise Terrain/Water Issuance of a suggested heading by air tr	Airframe/Component/ System Failure/Malfunction mined reasons.	In Flight Collision Witt Terrain/Water	Loss Of Engine Power(Total) - Mech Failure/Malf d approach. A factor in	Vortex Turbulence Encountered in the accident was the	Loss Of Control - In Flight	In Flight Collision With	Airframe/Component/ System Failure/Malfunction	Loss Of Engine Powe
A	O. stronger (magazi	0	1 he improper	6 for undeter	4	0 ule a misse	ir A factor	O	0 0 0	sio <u>is</u>	0
	None	None	Fatal ors were t	Fatal Fature Fat	Fatal	Serious Ire to exec	None Ther airpo	Minor	None	None If were fa	Serions
Damage to Aircraff	Substantial	Substantial	Destroyed tributing fact	Destroyed Destroyed of cabin pres	Substantial Were factors.	Substantial substantial	Substantial	Substantial	Substantial	Substantial Of the aircra	Substantial
Aircraft Type	Cessna 172	Cessna A185E fterrain,	Piper PA-31-350 ual fight rules, Con	Learjet 35 er following a loss	Cessna U206F into a box canyon v	Cessna T303 rwironment in signi	American General Aircraft AG5B Ircraft, which was k	Cessna 207A Ilmush.	Bell 206L-1	Dassault DA-20 itenance Inspection	Bell 206L-1
Category	Airplane	Airplane dent was so	Airplane ng under vis	Airplane Mental oxyg	Airplane ig and flight	Airplane he runway e	Airplane Airplane y transport a	Airplane dvertent sta	Helicopter n	Airplane Aguate mair	Helicopter n
Operator of Aircraft	Village Aviation ite visual outlook.	Gulf Air Taxi Airplane Cessna . r. associated with the accident was soft terrain.	Ameriflight Airplane Piper PA-31-350 Destroyed Fatal 1 In Flight Terrain/ from terrain while operating under visual flight rules. Contributing factors were the improper issuance	Surjet Aviation Airplane Learjet 35 Destroyed Fatal 6 Airframe/Comp. System Failure to receive supplemental oxygen following a loss of cabin pressurization, for undetermined reasons.	Stanley Air Taxi Airplane Cessna U206F Substantia cission to abort the landing and flight into a box canyon were factors				November 17, 1999 N519EH Passenger Neihart, MT Omniflight Helicopters Probable Cause: Clearance from air object was not maintained. Gusting wind conditions was a factor	Smith Air Airplane Dassault DA-20 Substantial None 0 noing gear door and inadequate maintenance inspection of the aircraft were factors	Evergreen Helicopters, Hintl. Intl. The rough water condition
Location N/	Bethel, AK I to maintain an adeque	October 7, 1999 N85CG Passenger Yakutat, AK Probable Cause. The pilot's selection of an unsuitable landing area. A factor	October 14, 1999 N1024B Cargo North Las Vegas, NV / Probable Cause. The failure of the plot-in-command to maintain separation in personnel inadeniate flight progress monitoring by radar departing control has	October 25, 1999 N47BA Passenger Aberdeen, SD Probable Cause: Incapacitation of the flight crewmembers as a result of their	October 31, 1999 N902CT Passenger Challis, ID Shrobable Cause: Aircraft control was not maintained. The pilot's improper de	November 1, 1999 N511AR Passenger Binghampton, NY Probable Cause. The pilot's improper in-flight decision to descend below the	November 12, 1999 N1195L Passenger Van Nuys, CA E Probable Cause. The pilot's encounter with unknown and unanticipated wake repeat a previously broadcast wake turbulence cautionary advisory when the s	November 16, 1999 N9933M Cargo Dillingham, AK Newember 16, 1999 N9933M Cargo Dillingham, AK Newember 16, 1999 N9933M Cargo Dillingham, AK Newember 16, 1999 November 16, 1999 N9933M November 16, 1999 N9933M November 16, 1999 N9933M N9933M November 16, 1999 N9933M	Neihart, MT naintained.: Gusting win	November 27, 1999 N216SA Cargo Boise, ID Probable Cause: Fallure of the forward gear door look pin. An inoperative lat	December 5, 1999 N600CK Passenger and Ship Shoal 225, Gulf Cargo of Mexico Probable Cause: The loss of power for undetermined reasons. A factor was
Type of Operation	Passenger iver of the forkilf	Passenger i of an unsultable	Cargo lol-in-command monitoring by ra	Passenger e fight crewmer	Passenger not maintained.	Passenger rin-flight decisio	Passenger er with unknown inbulence caution	Cargo o remove frost fr	Passenger object was not n	Cargo ird gear door loci	Passenger and Cargo or undefermined or undefermined
ation	N4762D failure of the dr	N85CG pilot's selection	N1024B failure of the pi	N47BA pacitation of th	N902CT aft control was	N511AR pilots improper	N1195L pilof's encount	N9933M ure of the pilot t	N519EH	N216SA Ire of the forwa	N600CK loss of power t
Bate Date	October 7, 1999 N476ZD Passenger Betnel, AK Probable Cause: The failure of the driver of the forkilf to maintain an adequal	October 7, 1999 Probable Cause: The	October 14, 1999 Probable Cause: The Descond Inadenuate	October 25, 1999 Probable Cause: Inca	October 31, 1999 Probable Cause: Aircr	November 1, 1999 Probable Cause: The I	November 12, 1999 Probable Cause. The Inepeat a previously bro	November 16, 1999 Probable Cause: Failu	November 17, 1999 Probable Cause: Clea	November 27, 1999 Probable Cause: Fallu	December 5, 1999 Probable Cause: The

Phase of Flight	Maneuvering - Tum To Reverse Direction	Landing - Roll	Descent - Normal	Cruise (Includes Low Altitude Straight And Level Flight)	Takeoff - Roll/Run (Ground Or Water)	
First Occurrence	Loss Of Control - In M Flight Re	On Ground/Water La	Loss Of Engine Dr Power(Partial) - Nonmechanical	In Flight Encounter Gr With Weather Ar	On Ground/Water Te Encounter With Or Terrain/Water	
Total Fatalities	-	0	0	0	0	0
Highest Injury	Fatal	None	None	Serious	None	
Damage to Aircraft	Destroyed	Substantial None	Substantial	Destroyed	Substantial None	Substantial None
Aircraft Type	Cessna T210L	Cessna 421C	Piper PA-31-350 Substantial None	Cessna 208B	Cessna 185	Beech 99A
Category	Airplane	Airplane	Airplane	Airplane	Airplane	Airplane
Operator of Aircraft	New Mexico Flying Service, doing business as B&M Enterprises	Flight Line Aviation	Union Flights Inc, doing Airplane business as Union Flights	M&N Aviation	Dennis Perry, doing business as Bear Lake Air Service	Bohlke International Airways
Location	Elida, NM	Gillette, WY	Scottsdale, AZ	Passenger and Adjuntas, Puerto Cargo Rico	ega	St. Barthelemy
Type of Operation	Cargo	Passenger	Cargo	Passenger and Cargo	Passenger	Passenger
Registration Number	N2179S	N3912C	81	99 N1315A		N491BB
Same See	December 8, 1999	December 10, 1999	December 10, 1999	December 23, 1999	December 23, 1999	December 31, 1999

ht	w 1 Level	dequate	Michiel Street School County Spring Co		Section of the section		ib (To in Or ludes	factors	chdown		<u> </u>	access	- E		th 4563, If		h 4563, If			lain
Phase of Flight	cludes Lorraight And	as the ina	ormal		Starting		nitial Clim Reductio	Dujnquiu	Flare/Tou		Engine(S	vith ramp	- Vfr Patte oach		Modify Wil al Code 2-		Addify With	(00-b	ormal	e No. 2 n
Phe	Cruise (Includes Low Altitude Straight And Level Flight)	er use of the electric fuel boost pump, while attempting to restart the engine in fight. A factor associated with this accident was tre-inadequate	Cruise - Norma		Standing - Engine(S)		Loss Of Engine Power Takeoff - Initial Climb (To 1St Power Reduction Or Pattern Alfitude; Includes Crosswind Len	it not maintained during takeoff by the pilot. An additional cause was the proper descent rate not maintained by the pilot. Contributing factors	Landing - Flare/Touchdown		Standing - Engine(S)	to comply with ramp access	Approach - Vfr Pattern - Final Approach		Landing (Modify With Operational Code 24563, If Touch-&-Go)		Takeoff (Modify With Operational Code 24563, If	00-8-11000 110	Cruise - Normal	inders, which led to the spinning of the No. 2 mai
тепсе	9 Zi	with this a	NORY - WING ON VOICE OR CENTER		WAY 2004 - 7 4444		ne Power	ed by the	_		COS		pr NETACHANNE ACUPOTABINA SECTION (Secretarian and contra		^ရ		ne - Mech	lo me spi
First Occurrence	Loss Of Engine Power(Total) - Nonmechanical	ssociated	Loss Of Engine Power(Total) - Nonmechanical	ent.	Miscellaneous/Other		s Of Engir	ıt maintair	On Ground/Wate Encounter With Terrain/Water		Propeller/Rotor Contact To Person	roscubed aliport procedures for boarding sircraff. A factor was the failure of another operator's ground personnel	Loss Of Control - In Flight		Dragged Wing,Rotor,Pod,Float Or Tail/Skid		Loss Of Control Ground/Water		Loss Of Engine Power(Total) - Mech Failure/Malf	which led
	Los Pow Nor	factor as	\$ 45 HOUGH VANAGEMENT WASHINGTON	Ø	Mis		<u>S</u>	nt rate no	On Enc		9 C	perator's	Loss (Flight	iitude.	Ora Vin		Los Gro			
st Total / Fatalities	O CONTRACTOR	flight. A		factor in	0		C - Novero Hair - revolvedere constitution	er desce			0	nother o		ensity all	0	973.	0		0	t of five c
Highest Injury	None	engine ir	Minor	guindin	None		None	the prop	None		Serious	illure of a	Tatal	he high d	None	мете Гасы	None	offion	None	lacemen
Damage to Aircraft	Substantial	estart the	Substantial	bilot falled to refuel the airplane. A ditch in the landing area was a contributing factor in the	Substantial		Substantial	ause was	Substantial		Minor	was the fa	Destroyed	approach to landing, resulting in an inadvertent stall. A factor was the high density attitude	Substantial	ng wind conditions and a dift bank adjacent to the runway edge were factors	Substantial	relicabler while attempting to takeoff. A factor was the high wind condition	Substantial	ery torque the cylinder and angine case through bots during the replacement of five cy littre
	S06 S	pting to n	-350	ding area	Ö.	reflight inspection, and remove a rotor blade tie-down strap	Ø	ditional c	a Orthodorosamini			A factor	MO	iali. A fa	e z o megani kina thankana h	the runk	S. W. R. C. O. W. P. MINISTON	s the high	S 70	polis duri
Aircraft Type	Cessna TU206	hile atterr	Piper PA-31-350	in the land	Bell 206B	ade tie-de	Beech G18S	lot. An a	Cessna 180		Partenavia P68C	g aircraft.	Cessna T210M	dvertent	Cessna 180J	djacent to	Mbb BO-105S	factor wa	Cessna T210L	through
Category	ane Ce	pump, w	eue Bild	A ditch		a rotor b	ane Be	fby the pi		rock.	Barrio S. Contrado Maria de La Contrado de	r boarding	eu C	in an ina	W. (VIII.)	lif bank a	Helicopter Mt	akeoff A	eure S	gine cas
	Airplane	uel boost	Airplane	airplane	Helicopter	1 remove	Airplane	ng takeof	Airplane	a large	Airplane	oj sainpe	Airplane	resulling	Airplane	s and a d	Helica	pting to t	e Airplane	er and en
Operator of Aircraft	Jes Jes	electric I		refuel the	ı Of Land ıt	ction, an	ress	ined duri	ir Service	ident wa		port proc	Flying ng busine terprises) landing,	#	condition		nie atten	ng Service	he cylind
Operator	K2 Adventures	ise of the	Salmon Air	talled to	U.S. Bureau Of Land Management	ight inspe	May Air Express	ot mainte	Shumagin Air Service	or in the accident was a large rock	Paragon Air	cribed air	New Mexico Flying Service, doing business as B & M Enterprises	oproach t	Baker Aircraft	ting wind	Air Logistics	icopter w	Aubum Flying Service	y lorque re
garer (a. 120 Ballin						uate pref	×	gnment n	Market and Address of the State	S-1000						ling. Gus	Service and the service of the servi	174,1935	AND DESCRIPTION OF THE PARTY OF	
Location	Talkeetna, AK	es, and ii	n City, ID	n becaus	Deadhorse, AK	ı an adeq	Minneapolis, MN	unway all	Sand Point, AK	r landing.	Kaunakakai, HI	of bypas	WN .	oeed duri	ii, ID	noed land	Vermilion 250, Gulf of Mexico	al control	CA	ersonnel nternal er
	Talkee	procedur	d Garde	exhaustio	Deadh	о репот	Minne	i proper r	Sand	terrain fo	Kauna	ntional ac	Clovis, NM	clent airs	Council, ID	om a bou		direction	Byron, CA	enance p strophic ii
Type of Operation	Passenger	nergency	Passenger and Garden City, ID Cargo	e to fuel	Passenger	mmand t	0	action and	Passenger	nsuitable	Passenger	jer's inter	0	itain suffi	Passenger	covery fir	Passenger and Cargo	maintain	Passenger	irs maint toed cata
	Pass	llowing ar the pilot.	Passer Cargo	power du	Pass	pilot-in-cc	Cargo	gear retr. ns.	Pass	ction of u	Pass	e passent	Cargo	re to mail	Pass	equate re	Passer Cargo	ot lolid e	Pass	e operati ation indu
Registration Number	N126KT	Probable Cause: The pilot not following emergency procedures, and impropule consumption calculations by the pilot.	N3528Y	Probable Cause: Loss of engine power due to fuel exhaustion because the	N47122	Probable Cause: A failure of the pilot-in-command to perform an adequate p	N621KE	Probable Cause. The premature gear retraction and proper runway alignmen were the carburetor temp conditions.	N49JT	Probable Gause. The pilot's selection of unsuitable terrain for landing. A fac	N4234L	Probable Cause. The prospective passenger's intentional act of bypassing prestrictions.	N6687B	Probable Cause. The pilot's failure to maintain sufficient airspeed during fine	N7739K	Probable Cause. The pliots inadequate recovery from a bounced landing.	N2785R	Probable Cause. The failure of the pilot to maintain directional control of the	N5378V	Probable Cause. The failure of the operator's maintenance personnel to probe and the resultant of starvation induced catastrophic internal engine?
		e. The p on calcult	A TON AN ANIMANAMANAMANAMANAMANAMANAMANAMANAMANAM	e: Loss		e: A failt		e: The prefer icing		e: The p		е. Тие р		e: The p	66	e: The p		e. The fe	66	e. The fa
Date	June 29, 1999	able Caus onsumpti	July 3, 1999	ible Caus	July 8, 1999	ible Caus	July 23, 1999	the carbu	August 2, 1999	ible Caus	August 5, 1999	Probable Caus restrictions	August 6, 1999	ible Caus	August 10, 1999	ible Caus	August 10, 1999	ble Caus	August 19, 1999	ble Caus ig and th
	June	Probs fuel or	July 3	Probs	July 8	Probs	July 2	Probe	Augu	Proba	Augus	Probe restric	Augu	Proba	Augus	Proba	Augus	Probe	Augus	Probe bearin

Flight Express Airplane Gessna 210L Destroyed Fatal 1 In Flight Collision With Ketchum Air Service Airplane de Havilland DH-C. Substantial None 0 Overrun Cinc.	Date	Number	Operation	Location	Operator of Aircraft	Category	Aircrait Type	Aircraft	Injury F.	Fatalities	First Occurrence	riigase or right
Ketchum Air Service Airplane de Havilland DHC Substantial None 0 Sunshine Helicopters Helicopter Aerospatiale Substantial None 0 Arthur E. Gerken, Doing Airplane de Havilland DHC- Substantial None 0 Business As Iliaska Airplane de Havilland DHC- Substantial None 0 Arthur E. Gerken, Doing Airplane de Havilland DHC- Substantial None 0 Business As Iliaska 2002 Airplane 2 Petroleum Helicopters Helicopter Bell 206-L3 Substantial Minor 0 Clearwater Air Airplane Cessna 207 Substantial Minor 0 Clearwater Air Airplane Cessna 185F Substantial None 0 3.569-2 Godiffere (MC) air as a surgice. C-Air Airplane Cessna 185F Substantial None 0 Godiffere (MC) air as a saction were the manufacturer's and the FAX's Insurficient Recording to the accident were the manufacturer's and the FAX's Insurficient Recording to the accident were the manufacturer's and the FAX's Insurficient Recording to the accident were the manufacturer's and the FAX's Insurficient Recording to the accident were the manufacturer's and the FAX's Insurficient Recording to the accident were the manufacturer and the FAX's Insurficient Recording to a diplane Pa-31-350 Destroyed Fatal 10 meteorological conditions (IMC) in an area of doud-covered mountainous terrain. Contribute MC while on a visual lifeth rules fileth bein and failure to obtain a current prefinity in the MC while on a visual lifeth rules fileth bein and failure to obtain a current prefinity into the Airplane Cessna 310Q Substantial Serious 0	Nugust 19, 1999	N640AJ	Cargo	Tampa, FL	table of the second companies of the second	Airplane	Cessna 210L	Destroyed	Fatal 1	e o		Emergency Descent/Landing (I.E., With Forced Landing, Except After Takeoff Or During Landing Approach)
N880KA Passenger and Port Aisworth, AK Ketchum Air Service Airpjane de Hawilland DHC: Substantial None 0 N8004S Passenger Kahului, Hi Sunshine Helicopters Helicopter Assenger N8004S Passenger Kahului, Hi Sunshine Helicopters Helicopter Assenger N8006 Passenger Main Pass 225A N8006 Cargo Cort of Necrotical Air Carry Cort of National Air Airbit Each Carry Carr		fellure of the p	oud water of ter	dures and directives	Sec. 25.0	for for his falls	ne to fuel the about	ine affer landi	ng Collowing (Booldark was the total loss of
Sunshine Helicopters Helicopter Aerospatiale Substantial None 0 Asysolah Arthur E. Gerken, Doing Airplane de Havilland DHC- Substantial None 0 Business As Iliaska 2 Lodge L	August 20, 1999		Passenger and	Port Alsworth, AK	Ketchum Air Service		de Havilland DHC-			Ó.		Takeoff - Roll/Run (Ground
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Arthur E. Gerken, Doing Airplane de Havilland DHC- Substantial None 0 Business As Iliaska Lode Lode Lode Business As Iliaska Busin	lugust 24, 1999	N6094S	Passenger	Kahului, HI		24	Aerospatiale	0.2		Lo	Of Control - In	Approach - Vfr Pattern -
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Petroleum Helicopters Helicopter Bell 206-L3 Substantial Serious 0 ober A car we fine the control of the serious of the serious of the conditions of the co	Ngust 25, 1999	4		lliamna, AK	Arthur E. Gerken, Doing Business As Iliaska		de Havilland DHC- 2	Substantial		P E		Takeoff - Roll/Run (Ground Or Water)
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Passenger and Pilot Point, AK Cargo Jequete compensation for wind conditions. F Passenger Volcano, Hi Bibon to confinue visual flight into instrument r andard operating procedures. Including flying Passenger Salisbury, MD	eptember 14, 1999 obable Cares. Com	N85LC	Passenger	Delta Junction, AK		Airplane the academ	Cessna 185F were the manufact	Substantial grants and the	Minor 0 FAS Insul	and the same of th	frame/Component/ stem lure/Malfunction	Landing - Roll r life limits and trapection
Passenger Volcano, Hi Passenger Volcano, Hi stion to continue visual flight into instrument randord operating procedures. Including flying Passenger Salisbury, MD	dce/kirse , eptember 19, 1999	N60859	Passenger and Cargo	Pilot Point, AK	C-Air	Airplane	Cessna 185F	Substantial	None 0	N In	Tight Encounter h Weather	Takeoff (Modify With Operational Code 24563, If On Touch-&-Go)
tandard operating procedures, including flying into IMC while on a visual flight rules flight peak and failure to obtain a current preflight weather briefing. Passenger Salisbury, MD Bay Land Aviation Airplane Cessna 310Q Substantial Serious 0 Loss Of Engine Power(Total) - Mech	eptember 25, 1999 obailie Cause: The	N411WL	re compensation Passenger to continue visus	or who conditions. Volcano, Hi iffight into instrument	Factors in the accident was Big Island Air meteorological condition	Airplane S (IMC) in an	Piper PA-31-350	Destroyed	Fatal 10	In I	draft, and swampy to a light Collision With train/Water to the accident ware	Climb The pilots failure to prope
- Fallure/Mail	Magte and fits dare eptember 28, 1999	N69945	d operating proo Passenger	edures, Including flyin, Salisbury, MD		Airplane	flight plan and fail Cessna 310Q	Substantial	Serious 0	dhi weethe Los Po Fai	gine il) - Mech	Approach - Vfr Pattern - Final Approach